



FRIDAY, JULY 6.

Train Accidents in May.

The following accidents are included in our record for the month of May:

COLLISIONS.

REAR.

On the morning of the 3d a repair train on the Chicago, Milwaukee & St. Paul road ran into the rear of a freight train which had stopped at LaFayette, Wis. Two cars were wrecked, a boy in the caboose fatally injured and a man less severely hurt.

On the evening of the 31 a freight train on the Terre Haute & Indianapolis road ran into the rear of a preceding freight in Vaadalia, Ill., damaging several cars. The engineer and fireman were slightly hurt.

On the afternoon of the 4th a stock train on the Canada Southern road ran into the rear of a preceding stock train near Woodslee, Ont., wrecking several cars. The fireman was hurt badly.

On the evening of the 5th a passenger train on the Boston & Albany road ran into the rear of a gravel train near Allston, Mass., doing some damage. The gravel train had no signal out.

On the evening of the 5th a passenger train on the Flint & Pere Marquette road ran into the rear of a freight train near Bay City, Mich., damaging an engine and 15 cars. The engineer and fireman were hurt.

On the morning of the 6th a repair train on the Wabash, St. Louis & Pacific road ran into the rear of a freight at New Salem, Ill., wrecking the caboose and killing a trainman.

On the morning of the 7th a wild engine on the New York, Susquehanna & Western road ran into the rear of a coal train near Stockholm, N. J., doing some damage.

On the morning of the 9th a passenger train on the Third Avenue line of the Manhattan Elevated road ran into the rear of another passenger train which was switching across the track at Seventieth street in New York. The engine and a car were damaged, and the fireman hurt.

On the night of the 9th a freight train on the New York Central and Hudson River road ran into some cars which had broken loose from a preceding freight near Fishkill Landing, N. Y. The caboose was wrecked and two drovers killed.

On the afternoon of the 11th a coal train on the Delaware, Lackawanna & Western road ran into the rear of a passenger train which had been stopped near New Milford, N. Y., by the burning of a small bridge. The rear car was wrecked and a passenger hurt. A flag had been sent back, but was not in time.

On the morning of the 14th a log train on the Flint & Pere Marquette road ran into the rear of another freight near East Saginaw, Mich. An engine and nine cars were badly broken.

On the morning of the 15th a freight train on the Chicago, St. Louis & Pittsburgh road ran into a preceding freight at Greenfield, Ind., wrecking a car.

On the afternoon of the 15th a freight train on the Buffalo, New York & Philadelphia road ran into a preceding freight which had stopped at Rouseville, Pa., wrecking the caboose.

On the afternoon of the 19th a freight train on the Northern Central road ran into the rear of a preceding freight near Woodberry, Md., wrecking several cars and killing a brakeman.

Very early on the morning of the 21st a passenger train on the Cincinnati, Indianapolis, St. Louis & Chicago road ran into the rear of a freight near Fowler, Ind. The engine and several cars were wrecked.

On the evening of the 21st an express train on the Central Pacific road ran into the rear of an emigrant train which was just going into a siding at West Berkeley, Cal. The engine was damaged, three emigrant cars wrecked and 11 passengers hurt.

On the night of the 24th a freight train on the Vicksburg & Meridian road ran into the rear of another freight on the bridge over Big Black River, Miss., damaging a locomotive and several cars and injuring three trainmen.

Very early on the morning of the 26th a freight train on the Illinois Central road ran over a misplaced switch and into the engine of a freight train standing on a siding in Kankakee, Ill. Both engines were damaged, and one of them upset down a bank.

On the morning of the 26th a coal train on the Cleveland, Lorain & Wheeling road ran into a preceding coal train near Strasburg, O., wrecking several cars.

On the morning of the 27th a freight train on the New York, Lake Erie & Western road ran into some cars standing in the yard at Binghamton, N. Y., wrecking a car.

Very early on the morning of the 28th a passenger train on the Louisville & Nashville road ran into a box car which had been left on the track at Stanton, Tenn. The engine and baggage car were upset and damaged, injuring the engineer.

On the evening of the 28th a passenger train on the Chesapeake & Ohio road ran into the rear of a freight which had stopped at Hedge, Ky., damaging the engine and several cars, and injuring the engineer and fireman. A brakeman had been sent back with a flag, but he sat down and went to sleep.

On the evening of the 28th a coke train on the Pennsylvania Railroad ran into the rear of a preceding coke train near Uniontown, Pa., wrecking several cars.

On the evening of the 28th a milk train on the New York, Lake Erie & Western road ran into a car left standing on the track at Turners, N. Y. The engine and several cars were damaged.

Early on the morning of the 29th the yard engine at the Roane Iron Works at Chattanooga, Tenn., became unmanageable from some cause, and drove four cars loaded with iron into a lot of freight cars standing in the yard, piling up seven cars in a bad wreck.

On the morning of the 29th a passenger train on the New York Central & Hudson River road ran into the rear of a wild engine near Jordan, N. Y. Both engines and a baggage car were damaged and a fireman hurt.

Near noon on the 29th a freight train on the Cincinnati, New Orleans & Texas Pacific road into a car which had been left on the main track at Kinkead, Ky. The engine and several cars were wrecked and two trainmen badly hurt.

On the afternoon of the 29th a freight train on the Dunkirk, Allegheny Valley & Pittsburgh road ran into a preceding freight which had stopped near Frewsburg, N. Y., damaging the engine and several cars and injuring the engineer.

Very early on the morning of the 31st a freight train on the New York Central & Hudson River road ran into the

rear of another freight standing on the track in Rochester, N. Y. The engine was damaged and several freight cars wrecked.

On the afternoon of the 31st a passenger train on the Delaware, Lackawanna & Western road ran into the rear of a freight train near East Newark, N. J. The engine and two cars were badly broken and the engineer hurt.

BUTTING.

On the afternoon of the 1st there was a butting collision between a passenger and a freight train on the Atlanta & Charlotte Air Line near Lula, Ga. Both engines and several cars were wrecked, the wreck being piled up in a deep cut.

On the morning of the 6th there was a butting collision between two freight trains on the International & Great Northern road near San Antonio, Tex. Both engines and several cars were wrecked.

On the afternoon of the 8th there was a butting collision between two passenger trains on the Chicago & North-western road near Wales, Wis. Both engines were wrecked, a fireman killed, two engineers, a fireman and five passengers hurt. One of the trains was running against orders.

On the afternoon of the 9th there was a butting collision between a passenger and a construction train on the Utica & Black River road, near Laforgeville, N. Y. An engine and three cars were damaged.

On the night of the 15th there was a butting collision between two freight trains on the Baltimore & Potomac road near Seabrook, Md., by which both engines were badly broken and an engineer hurt.

About noon on the 18th there was a butting collision between a freight train and a wild engine on the Maine Central near Vassalboro, Me., wrecking both engines and 15 cars. Immediately after the engines struck the boiler of the freight engine exploded, tearing the engine to pieces. Both engines and a fireman were killed. The wild engine was running on the freight train's time.

On the evening of the 21st there was a butting collision between a passenger train and a wild engine on the Denver & Rio Grande road near Salida, Col. Both engines and several cars were damaged, a fireman killed and engineer hurt.

On the morning of the 25th there was a butting collision between a freight train and an engine at the coal-pockets in the yard at Port Jervis, N. Y., on the New York, Lake Erie & Western road. Both engines were slightly damaged.

On the morning of the 29th there was a butting collision between a freight train and a yard engine on the New York Central & Hudson River road in Amsterdam, N. Y. Both engines and 10 cars were damaged.

On the morning of the 31st there was a butting collision between a special passenger train on the Pittsburgh, Fort Wayne & Chicago road and a construction train which was crossing the main track at Wood's Run, Pa. Both engines were badly damaged.

On the afternoon of the 31st, on the New York and New England road, near Towner, Conn., there was a butting collision between a freight train and a construction train which was running backward. An engine and three cars were damaged. The work train was running without orders.

CROSSING.

Very early on the morning of the 21st a passenger train on the New York, Lake Erie & Western road ran into a coal train on the Fall Brook Coal Co.'s road at the crossing in Corning, N. Y. The engine and several coal cars were badly broken.

DERAILMENTS.

BROKEN RAIL.

On the evening of the 30th the engine of a freight train on the Cleveland, Columbus, Cincinnati & Indianapolis road was thrown from the track in Cleveland, O., by a broken rail.

On the morning of the 31st a freight train on the Grand Trunk road struck a broken rail near a bridge at Stratford Hollow, Vt., and the engine and several cars were thrown from the track and went over the bridge, carrying part of it down with them. The engineer and fireman were killed.

BROKEN FROG.

On the morning of the 9th six cars of a freight train on the Cheshire road were thrown from the track at Cold River, N. H., by a broken frog.

BROKEN SWITCH-ROD.

Very early on the morning of the 8th a freight train on the Chicago, Milwaukee & St. Paul road was thrown from the track at Lamolite, Minn., by a broken switch rod. The engine tipped over, and several cars were piled up in a bad wreck. The engineer jumped into the river and was drowned.

On the morning of the 10th three cars of a ballast train on the Chicago, Milwaukee & St. Paul road were thrown from the track near Wabasha, Minn., by a broken switch rod. Two laborers were hurt.

BROKEN BRIDGE.

On the morning of the 8th a freight train on the Chicago, St. Paul, Minneapolis & Omaha road broke through a bridge near Norfolk, Neb., and the engine and several cars were piled up in the creek, killing a brakeman and injuring the engineer badly.

On the afternoon of the 12th a passenger train on the Peensboro & Harrisville road broke through a bridge near Peensboro, W. Va., and the engine and baggage car went down 15 feet into Hughes River. The engineer and conductor were killed.

On the morning of the 19th a freight train on the Kansas City, Lawrence & Southern Kansas road broke through the bridge over the Arkansas River at Oxford, Kan., and the engine and one car went down into the river, killing the engineer and injuring the fireman.

On the morning of the 25th a passenger train on the Denver & Rio Grande road went through a bridge over the Gunnison River, near Roubideau Creek, Col., the abutments of which had been partly washed out by a freshet. The engineer and fireman went down and were drowned, and a brakeman was hurt. The baggage car was carried a mile down the river.

On the evening of the 25th a bridge over Dupage River, near Joliet, Ill., on the Chicago, Rock Island & Pacific road gave way under a freight train and seven cars went down into the river and were wrecked. A brakeman and two passengers in the caboose were hurt.

SPREADING OF RAILS.

On the afternoon of the 15th two cars of a passenger train on the Syracuse, Chenango & New York road were thrown from the track near Lebanon, N. Y., by the spreading of the rails.

On the evening of the 29th six cars of a coal train on the Cincinnati & Muskingum Valley road were thrown from the track near Circleville, O., by the spreading of the rails.

BROKEN WHEEL.

On the night of the 5th 14 cars of a freight train on the New York Central & Hudson River road were thrown from

the track near Oriskany, N. Y., by a broken wheel. The cars went into the ditch and were wrecked.

On the afternoon of the 6th several cars of an oil train on the New York, Lake Erie & Western road were thrown from the track near Middletown, N. Y., by a broken wheel. The oil from a wrecked car caught fire and the fire spread rapidly, burning up 30 oil tank cars and a caboose and completely destroying the track for half a mile. The road was blocked eleven hours.

On the afternoon of the 9th three cars of a freight train on the New York, Lake Erie & Western road were thrown from the track near Vail's Gate, N. Y., by a broken wheel.

LOOSE WHEEL.

On the evening of the 13th six cars of a freight train on the Rensselaer & Saratoga road were thrown from the track near Castleton, Vt., by a loose wheel.

On the morning of the 14th two cars of a passenger train on the Louisville & Nashville road were thrown from the track in Edgfield, Ky., by a loose wheel.

BROKEN AXLE.

On the night of the 1st several cars of a freight train on the Central Railroad of New Jersey were thrown from the track near Treichlers, Pa., by a broken axle. An oil car caught fire and five cars were destroyed, the fire and wreck blocking the road all night.

On the morning of the 25th four cars of a freight train on the Pennsylvania Railroad were thrown from the track near Downingtown, Pa., by a broken axle.

On the night of the 25th four cars of a freight train on the Virginia Midland road were thrown from the track at Shorties Bridge, Va., by a broken axle and piled up at the foot of a bank, injuring three trainmen badly.

BROKEN TRUCK.

On the morning of the 2d several cars of a freight train on the St. Louis, Iron Mountain & Southern road were thrown from the track near Arkadelphia, Ark., by a broken truck.

On the 12th several cars of a freight train on the Pittsburgh, Cincinnati & St. Louis road were thrown from the track near Long's, O., by the breaking of a truck.

On the morning of the 21st eight cars of a freight train on the Central Pacific road were thrown from the track near Teal, Cal., by a broken truck.

ACCIDENTAL OBSTRUCTION.

On the afternoon of the 2d ten cars of a ballast train on the Old Colony road were thrown from the track in New Bedford, Mass., by a large stone, which had fallen on the track. A brakeman was hurt so that he died in a few hours.

On the night of the 8th a passenger train on the Lehigh Valley road ran into a telegraph pole, which had been blown down across the track by a violent storm. The engine and one car were thrown from the track and damaged.

On the night of the 14th a passenger engine on the Indiana, Bloomington & Western road ran into a tree which had been blown down across the track near Columbus, O., and the engine was thrown from the track.

On the night of the 20th the engine and several cars of a freight train on the Wabash, St. Louis & Pacific road were thrown from the track at Elm Point, Mo., by a large tree which had been blown down across the track.

On the morning of the 23d a freight and emigrant train on the Southern Pacific road was thrown from the track near Tehachapi, Cal., by a brake-beam falling on the rails. The train broke into three sections, consisting of five emigrant cars and the caboose and the five box cars, four of which left the track and were badly wrecked. The middle section consisted of five box cars, the front of 22 box cars and the engine. In this section were both brakemen. Alexander Cochran, one of the brakemen, was in the rear, and seeing the five box cars following them, signaled the engineer to run out of danger. He then jumped from the train and at the risk of his life boarded the five cars and stopped them, the engine and the 22 cars running to Girard and side-tracking.

On the evening of the 29th 11 cars of a freight train on the New York Central & Hudson River road were thrown from the track in Syracuse, N. Y., by a brake-beam which dropped on the rails, and piled up in a very bad wreck.

CATTLE.

On the morning of the 6th a freight train on the Chicago & Northwestern road ran over a cow near St. Peter, Minn., and 13 cars were thrown from the track.

On the afternoon of the 7th a passenger train on the Pennsylvania Railroad ran over a cow near Cumberland, Md., and the engine was thrown from the track and upset down a bank. The fireman was hurt.

On the evening of the 12th a freight train on the Missouri, Kansas & Texas road ran over two cows near Fort Worth, Tex., and the engine was thrown off the track, injuring the engineer.

On the afternoon of the 13th a freight train on the Chicago, St. Paul, Minneapolis & Omaha road ran over a cow near Florence, Neb., and the engine and two cars were thrown from the track, the engine rolling over down a bank. The engineer was caught under the engine and scalded to death.

On the morning of the 18th a freight train on the Canadian Pacific road ran over a horse near Hochelaga, Que., and several cars were wrecked.

On the morning of the 25th three cars of a freight train on the Chicago & Northwestern road were thrown from the track near Mankato, Minn., by running over a cow. The conductor was killed.

WASH OUTS AND LAND-SLIDES.

Early on the morning of the 1st a passenger train on the Chesapeake & Ohio road ran into a land-slide near Quinnimont, W. Va., and the engine was thrown from the track and rolled down a bank into New River. The engineer and fireman were hurt.

On the night of the 9th a freight train on the Chicago & Alton road ran into a wash-out near Joliet, Ill., and the engine and several cars were piled up in a bad wreck.

On the evening of the 25th a freight train on the Wabash, St. Louis & Pacific road into a wash-out near Edwardsville, Ill., and was badly wrecked.

On the morning of the 29th a passenger train on the Chicago, Milwaukee & St. Paul road ran into a land-slide near Lake City, Minn., and was wrecked.

WIND.

On the afternoon of the 8th a car of a freight train on the Chicago & Northwestern road was blown from the track near Fairfax, Ia., by a violent storm.

On the night of the 8th four cars of a freight train on the Lehigh Valley road were blown from the track by a tornado near Stony Creek, Pa., and upset down a bank.

Near midnight of the 18th a passenger train on the Indianapolis & St. Louis road went through the gap where a small bridge had been blown down by a cyclone near Hillsboro, Ill., only a few minutes before. The engine went down in the creek with a baggage car on top of it, the engineer was killed, the fireman and baggageman hurt.

MISPLACED SWITCH.

On the afternoon of the 4th a freight train on the New York, Lake Erie & Western road was thrown from the track

at Saddle River, N. J., by a misplaced switch, and two cars rolled down a bank.

On the night of the 9th the engine and two cars of a passenger train on the New York Central & Hudson River road were thrown from the track near Clifton Springs, N. Y., by a misplaced switch.

On the morning of the 14th the engine and two cars of a passenger train on the Central Pacific road were thrown from the track in West Oakland, Cal., by a misplaced switch.

On the morning of the 16th the engine of a freight train on the Shenandoah Valley road was thrown from the track at Kimball, Va., by a misplaced switch.

On the morning of the 17th the engine of a passenger train on the Annapolis & Elkridge road was thrown from the track near Annapolis, Md., by a misplaced switch.

On the morning of the 17th the engine and four cars of a passenger train on the Central Vermont road was thrown from the track at East Granville, Vt., by a misplaced switch. The engine and three cars were badly broken, the station platform torn up, the engineer, baggageman and a woman standing on the platform were hurt.

On the evening of the 19th a freight train on the Chicago & Atlantic road was thrown from the track in Marion, O., by a misplaced switch.

Near midnight on the 19th a freight train on the Missouri Pacific road was thrown from the track in Nevada, Mo., by a misplaced switch. The engineer and fireman were hurt.

On the afternoon of the 21st three cars of a freight train on the Missouri, Kansas & Texas road were thrown from the track in Fort Worth, Tex., by a misplaced switch. One car rolled down a bank and was completely wrecked.

On the afternoon of the 24th a coal train on the Beaver Creek & Cumberland Mountain road was thrown from the track near Greenwood, Ky., by a misplaced switch. A trainman was killed and two others hurt.

Very early on the morning of the 28th a freight train on the Missouri, Kansas & Texas road was thrown from the track in Fort Worth, Tex., by a misplaced switch. The engine rolled over down a bank, knocking over a water tank, and one car was wrecked.

On the evening of the 28th several cars of a freight train on the New York, Pennsylvania & Ohio road were thrown from the track at Vienna Junction, O., by a misplaced switch.

MALICIOUS.

On the morning of the 1st a freight train on the Intercolonial road was thrown from the track in Truro, N. S., by a switch which had been purposely misplaced.

On the afternoon of the 7th two cars of a repair train on the Missouri Pacific road were thrown from the track in Atchison, Kan., by a switch which had been purposely misplaced. Six laborers were badly hurt.

On the afternoon of the 16th the engine and 18 cars of a freight train on the Reading & Columbia road were thrown from the track near Ephrata, Pa., by a heavy plank laid across the rails. The engine rolled down a bank, killing the master mechanic of the road, who was riding on it. A boy was afterward arrested for placing the obstruction.

UNEXPLAINED.

On the afternoon of the 1st several cars of a freight train on the Camden & Atlantic road ran off the track near Kirkwood, N. J., blocking the road several hours.

On the afternoon of the 3d a freight train on the Concord road ran off the track near Raymond, N. H., blocking the road several hours.

On the morning of the 7th a construction train on the Atlantic & Pacific road ran off the track near Albuquerque, N. M., and one car was upset and badly broken, killing two laborers.

On the afternoon of the 9th a passenger train on the Seaboard & Roanoke road ran off the track near Weldon, N. C., wrecking several cars.

On the afternoon of the 9th a freight train on the South Pacific Coast road ran off the track near Alma, Cal., and the fireman and conductor were hurt.

On the morning of the 10th the engine of a passenger train on the Cheshire road ran off the track at South Keene, N. H., doing no special damage.

Very early on the morning of the 14th several cars of a freight train on the Canada Southern road ran off the track near Essex Centre, Ont., blocking the road seven hours.

On the morning of the 14th two cars of a repair train on the Little Rock, Mississippi River & Texas road ran off the track near Woodson, Ark., and were wrecked, killing one laborer and injuring another.

On the afternoon of the 15th some cars of a freight train on the Richmond & Danville road ran off the track near Noreno, Ga., blocking the road two hours.

On the afternoon of the 21st eight cars of a freight train on the New York Central & Hudson River road ran off the track near Fort Plain, N. Y., blocking two tracks for several hours.

On the evening of the 24th some cars of a freight train on the Boston & Albany road ran off the track near Newton Centre, Mass., blocking the road an hour.

On the morning of the 25th several cars of a freight train on the St. Louis, Iron Mountain & Southern road ran off the track near Little Rock, Ark., and were wrecked.

On the afternoon of the 27th a car of a freight train on the Delaware, Lackawanna & Western road ran off the track near Cortlandt, N. Y., and was wrecked.

On the night of the 29th 14 cars of a freight train on the New York Central & Hudson River road ran off the track near Syracuse, N. Y., and 11 cars were badly broken.

On the morning of the 30th the caboose of a freight train ran off the track at Stiles, N. Y., on the Delaware, Lackawanna & Western road.

On the evening of the 31st the engine of a freight train ran off the track in Holyoke, Mass., on the New Haven & Northampton road.

OTHER ACCIDENTS.

MISCELLANEOUS.

On the night of the 1st the engine of a passenger train on the Baltimore & Ohio road blew out a cylinder head when near Fairmont, W. Va., doing much damage.

On the morning of the 9th the baggage car of a passenger train on the Louisville, New Albany & Chicago road was set on fire when near Cedar Lake, Ind., by the explosion of a gas stove. The car was destroyed by the fire, the express agent and newsboy badly burned.

On the afternoon of the 10th the engine of a passenger train on the New York, Lake Erie & Western road broke a parallel rod when near Hampton, N. Y., and the loose end tore out one side of the cab.

On the morning of the 15th, as a freight train on the Oregon Short Line of the Union Pacific was near Pocatello, Idaho, five kegs of powder in one of the cars exploded, completely wrecking four cars and injuring two brakemen very severely.

On the afternoon of the 25th, as a passenger train on the Central Railroad of New Jersey was near Cranford, N. J., the engine broke an eccentric rod. A piece of the rod rebounding from the road-bed, tore a hole in the bottom of a car.

SUMMARY.

This is a total of 120 accidents, in which 28 persons were

killed and 77 injured; an increase of 26 accidents, and of 4 killed, with a decrease of 9 injured, as compared with May of last year.

The five months of the current year, to the end of May, show a total of 720 accidents, 183 killed and 713 injured; a monthly average of 144 accidents, 37 killed and 143 injured. The month was considerably below the average for the year.

Awards of the Juries at the Chicago Exposition.

The following is the list of the awards made to exhibitors by the juries at the Chicago Exposition of Railway Appliances, so far as yet made public. It is stated that some additional awards will be announced in a supplementary list:

DEPARTMENT A—ROLLING STOCK.

CLASS NO. 1—LOCOMOTIVES.

Best display of locomotives, grand gold medal—Brooks Locomotive Works.

" Narrow-gauge passenger, gold medal—Brooks Locomotive Works.

" Standard-gauge freight, gold medal—Baldwin Locomotive Works.

" Narrow-gauge freight, gold medal—Baldwin Locomotive Works.

" Switching, gold medal—Brooks Locomotive Works.

" Logging and mining, gold medal—H. K. Porter & Co.

" Locomotive involving important new principles, gold medal—Philadelphia & Reading R. R. Co.

" Locomotive clock, bronze medal—Crosby Steam Gauge & Valve Company.

" Steam gauge cock, bronze medal—James B. Clow & Son.

" Stop cock, bronze medal—James B. Clow & Son.

" Locomotive headlight (to burn oil), gold medal—Headlight Signal Co.

" Steam gauge, silver medal—Ashcroft Mfg. Co.

" Water gauge, bronze medal—Jas. B. Clow & Son.

" Gauge test pump, bronze medal—Jas. P. Marsh & Co.

" Locomotive bell, silver medal—Jas. B. Clow & Son.

" Locomotive oiler, bronze medal—A. W. Swift.

" Wire cloth, bronze medal—Clinton Wire Cloth Co.

" Locomotive safety valve, silver medal—D. E. Pierce.

" Steam muffler, silver medal—Crosby Steam Gauge & Valve Co.

" Steam whistle, silver medal—James B. Clow & Son.

" Filterer for water for locomotive, bronze medal—Farguhar-Oldham Filter Co.

" Boiler rivets, bronze medal—Hoopes & Townsend.

" Elevated railway system, gold medal—Richard P. Morgan.

" Sand dryer, silver medal—Johnson & Hartwell.

" Locomotive steel forgings, gold medal—Midvale Steel Co.

" Locomotive ash pan, bronze medal—W. H. D. Newth.

" Pop valve, silver medal—Consolidated Safety Valve Co.

" Piston packing expander, bronze medal—Winona Machinery Co.

" Ratchet drill attachment, bronze medal—J. A. Wilson.

" Locomotive and car iron forgings, silver medal—Wilson, Walker & Co.

" Automatic oiler, bronze medal—Yost Car Axle Lubricator Co.

" Locomotive feed door, bronze medal—Butman Furnace Co.

" Boiler cleaner, bronze medal—J. F. Hotchkiss.

" Pressure gauge, silver medal—Yale & Towne Mfg. Co.

" Time speed and pressure, bronze medal—Edson Recording Alarm Gauge Co.

" Recording alarm and gauge, bronze medal—Edson Recording Alarm Gauge Co.

CLASS NO. 2—CARS.

Best display of cars, gold medal—Pullman's Palace Car Co.

" Private or officer's, gold medal—Railway Age.

" Dining, gold medal—Pullman's Palace Car Co.

" Sleeping, gold medal—Pullman's Palace Car Co.

" Day, gold medal—Jackson & Sharp Co.

" Mail, gold medal—Harrison Bag Rack Co.

" Baggage, silver medal—Pullman's Palace Car Co.

" Stock, gold medal—New York Live Stock Express Co.

" Box, silver medal—St. Charles Car Co.

" Flat or gondola, silver medal—U. S. Tube Rolling Stock Co.

" Coal, ore or gravel dump, silver medal—U. S. Car Co.

" Wrecking, silver medal—Bucyrus Foundry & Machine Co.

" Road or section master's, silver medal—Fairbanks, Morse & Co.

" Hand, silver medal—Fairbanks, Morse & Co.

" Velocipede, silver medal—T. B. Jeffrey.

" Tank car, silver medal—Chester Oil Co.

" Caboose car, silver medal—La Fayette Car Co.

" Smoking car, silver medal—Pullman Palace Car Co.

CLASS NO. 3—RUNNING GEAR.

Best steel axle (Master Car-Builders' standard), silver medal—Midvale Steel Co.

" Iron axle (Master Car-Builders' standard), silver medal—Pittsburgh Forge & Iron Co.

" Passenger train brake, gold medal—Westinghouse Air Brake Co.

" Brake shoe, silver medal—Congdon Brake Shoe Co.

" Springs (elliptic), gold medal—A. French & Co.

" Springs (bearing), silver medal—A. French & Co.

" Springs (buffer or draw), bronze medal—French Spiral Spring Co.

" Equalizing spring, silver medal—Cliff & Righter.

" Draw bar for freight cars, silver medal—Continuous Draw Bar Co.

" Journal box lid, silver medal—W. J. Watson.

" Journal bearing, silver medal—D. A. Hopkins.

" Steel tire for car wheels, gold medal—Midvale Steel Co.

" Steel tire combination wheel, gold medal—Allen Paper Car Wheel Co.

" Car step, bronze medal—T. B. Howe.

" Passenger car platform, coupler and buffer, gold medal—McConway, Torley & Co.

" Passenger car six wheel truck, gold medal—Suspension Car Truck Co.

" Automatic freight car coupler, silver medal—McConway, Torley & Co.

" Display car wheels, gold medal—Allen Paper Car Wheel Co.

" Electric brake, gold medal—Waldamer Electro-Magnetic Brake Co.

" Transfer table, silver medal—N. W. Robinson.

CLASS NO. 4—INTERIOR FURNISHINGS FOR PASSENGER CARS.

Best display, gold medal—Post & Co.

" Car door lock, bronze medal—Post & Co.

" Seat end, silver medal—Hale & Kilburn.

Best Seatend lock, bronze medal—S. A. Smith.

" Seat end fixtures, bronze medal—Gardner & Co.

" Curtain goods, silver medal—F. W. Devoe & Co.

" Curtain roller, bronze medal—Samuel Laycock & Son.

" Head lining (wood), silver medal—Hale & Kilburn.

" Window blind, bronze medal—I. G. Wilson.

" Seat frame, silver medal—Hale & Kilburn.

" Upholstering, silver medal—Hale & Kilburn.

" display fancy woods and veneers, gold medal—The E. D. Albro Co.

" Berth and seat springs, silver medal—E. L. Bushnell.

" Wash-room pump, silver medal—J. B. Clow & Son.

" Cooking range, silver medal—Stephen Wilkes.

" Reclining chair, silver medal—Marks Adjustable Folding Chair Co.

" Revolving chair, silver medal—Marks Adjustable Folding Chair Co.

" Washstand for parlor or sleeping car, complete, silver medal—Hale & Kilburn.

" Basket rack, silver medal—Post & Co.

" Door holder, bronze medal—Pullman Door Check Co.

" Door knob, bronze medal—Yale & Towne Mfg. Co.

" Cuspidore or spittoon, bronze medal—Eureka Iron Co.

" Headboard fixtures (for sleeping car), bronze medal—Post & Co.

" Folding bed for car, complete, silver medal—Hale & Kilburn.

" Electric or other call bell, bronze medal—Western Electric Co.

" Window ventilator, bronze medal—H. H. Reynolds.

" Car seat, complete, silver medal—Hale & Kilburn.

" Display of metal trimmings, gold medal—Union Brass Co.

" Display of glass veneers, silver medal—Glass Veneer Co.

" Method of lighting cars, gold medal—J. M. Foster.

" System of closet ventilation, silver medal—E. Y. Bell.

" Elevated, gravity and mining railway, gold medal—Chicago Elevated Ry. Co.

CLASS NO. 5—FREIGHT CAR APPLIANCES.

Best car seal, bronze medal—E. J. Brooks.

" Car replacer, silver medal—M. S. Shotwell.

" Car pusher, bronze medal—C. T. Barnes.

" Grain car door, silver medal—D. F. Van Liew.

" Freight car door, silver medal—E. E. Pratt.

" End door inside fastener, bronze medal—W. J. Watson.

" Freight car lock, bronze medal—Yale & Towne Mfg. Co.

" Door hanger, bronze medal—S. H. & E. Y. Moore.

" Metal roofing, silver medal—Empire Car Roofing Co.

DEPARTMENT B—MACHINERY.

CLASS NO. 1—WOOD WORKING.

Best display of wood-working machinery (not less than six machines), grand gold medal—J. A. Fay & Co.

" Planing and matching machine, to plane twenty-four inches wide and under, and not match less than twelve inches, gold medal—Goodell & Waters.

" Flooring and bending machine, gold medal—J. A. Fay & Co.

" Dimension planing machine, with carriage and roll feed for dressing out of wind and surfacing, silver medal—J. A. Fay & Co.

" Daniels or traverse planing machine, silver medal—J. A. Fay & Co.

" Double surfacing machine to dress on one or both sides, twenty-six inches wide and eight inches thick, and under, gold medal—J. A. Fay & Co.

" Surfacing machine for smoothing purposes, gold medal—J. A. Fay & Co.

" Band saw machine for general work, silver medal—Goodell & Waters.

" Band saw for re-sawing, to re-saw twenty-four inches wide and under, silver medal—J. A. Fay & Co.

" Railway cutting-off saw machine, with traversing arbor for timbers, silver medal—J. A. Fay & Co.

" Ripping saw with elevating arbor, silver medal—J. A. Fay & Co.

" One spindle horizontal boring machine, silver medal—J. A. Fay & Co.

" Three spindle horizontal boring machine, silver medal—J. A. Fay & Co.

" Radial horizontal boring machine, silver medal—J. A. Fay & Co.

" Three spindle vertical boring machine, silver medal—J. A. Fay & Co.

" Automatic car gaining machine, silver medal—J. A. Fay & Co.

" Vertical car tenoning machine, silver medal—J. A. Fay & Co.

" Vertical tenoning machine with movable carriage for timber work, silver medal—J. A. Fay & Co.

" Tenoning machine with copes for cabinet and general work, silver medal—J. A. Fay & Co.

" Vertical spindle shaping and edge molding machine, silver medal—J. A. Fay & Co.

" Universal wood worker and molder, silver medal—J. A. Fay & Co.

" Straight molding machine to work four sides, silver medal—J. A. Fay & Co.

" Surface polishing machine, silver medal—J. A. Fay & Co.

" Automatic knife grinding machine and saw sharpener, silver medal—Harold & Bush.

" Wood turning machine for pattern makers' use, silver medal—J. A. Fay & Co.

" Reciprocating and mortising machine, silver medal—J. A. Fay & Co.

" Timber dressing machine with capacity of reducing 16 inches or over and 12 inches thick, or over, silver medal—J. A. Fay & Co.

" Circular re-sawing machine, silver medal—Goodell & Waters.

" Hollow chisel mortising machine, silver medal—Greenlee Bros.

" Self-feeding rip saw, bronze medal—Greenlee Bros.

" Automatic saw sharpener, silver medal—Halliday, Litchfield & Co.

" Lumber dryer, silver medal—H. I. Kimball.

" Flexible shafting, bronze medal—Stow Flexible Shaft Co.

CLASS NO. 2—IRON WORKING.

Best Display of iron-working tools (power), not less than six in number, grand gold medal—Pratt & Whitney Mfg. Co.

" Axle turning machinery, silver medal—Machine Tool Works, Philadelphia.

" Car wheel boring and turning machine, gold medal—Machine Tool Works, Philadelphia.

" Six spindle drilling machine, silver medal—Niles Tool Works.

" Hydraulic wheel press, silver medal—Machine Tool Works, Philadelphia.

" Wheel grinding or truing machine, silver medal—Chilled Car Wheel Grinding Co.

" Iron planing machine, silver medal—Machine Tool Works.

" Iron crank shaping machine, silver medal—Pratt & Whitney Mfg. Co.

Best screw cutting engine lathe, silver medal—Wm. Sellers & Co.
 " Upright drilling machine, silver medal—Wm. Sellers & Co.
 " Radial drilling machine, silver medal—Machine Tool Works.
 " Bolt heading machine, silver medal—National Machinery Co.
 " Bolt forging machine, silver medal—National Machinery Co.
 " Bolt and screw cutting machine, silver medal—National Machinery Co.
 " Set screw machine, silver medal—Pratt & Whitney Mfg. Co.
 " Power hammer, silver medal—Machine Tool Works.
 " Power punch and shears, silver medal—Hercules Iron Works.
 " Planer chuck, silver medal, Pratt & Whitney Mfg. Co.
 " Universal and independent chuck, over twelve inches in diameter, silver medal—E. Horton & Son.
 " Universal lathe chuck, twelve inches and under, silver medal—E. Horton & Son.
 " Assortment of lathe chucks, silver medal—E. Horton & Son.
 " Assortment of planer chucks, silver medal—E. Horton & Son.
 " Display of emery grinding machinery, silver medal—Northampton Emery Wheel Co.
 " Display of machinists' vises, silver medal—Fisher & Norris.
 " Display of taps and dies, silver medal—Pratt & Whitney Mfg. Co.
 " Nut tapping machine, silver medal—Shumway, Burgess & Co.
 " Drill grinding machine, silver medal—Wm. Sellers & Co.
 " Slotting machine, silver medal—Machine Tool Works.
 " Driving wheel lathe, gold medal—Wm. Sellers & Co.
 " Shafting, gold medal—Jones & Laughlins.
 " Hanger, bronze medal—
 " Pulley, " " "
 " Flue welding device, bronze medal—Hartz & Fix.
 " Portable power drill, bronze medal—Thos. H. Dallet & Co.
 " Spring tester, silver medal—Tinius Olson & Co.
 " Display of tools for repairing locomotives, silver medal—Flanders Machine Works.
 " Hot air pumping engine, silver medal—C. H. Delamater & Co.
 " Machine for testing strength of metals, gold medal—Fairbanks, Morse & Co.
 " Vertical boring mill, silver medal—Wm. Sellers & Co.
 " Horizontal boring machine, silver medal—Wm. Sellers & Co.

DEPARTMENT C—TRACK GOODS. CLASS NO. 1.

Best display of steel and iron rails and track goods, grand gold medal—Cambria Iron Co.
 " Track laying device, gold medal—American Railway Construction Co.
 " Track bolt and nut, bronze medal—Hoopes & Townsend.
 " Track bolt washer, bronze medal—Pratt Mfg. Co.
 " Railway fencing, silver medal—Western Fence Co.
 " Claw bar, bronze medal—Cramer, Adams & Co.
 " Cross tie (metal), silver medal—D. S. Whittenhall.
 " Power excavator, gold medal—Wilcox & Stock.
 " Crossing, silver medal—Morden Frog & Crossing Co.
 " Fish and angle plate, silver medal—Morris Sellers & Co.
 " Track jack, bronze medal—Jenny Jack (Pettibone & Milliken, Agts).
 " Jack screw, bronze medal—Cramer, Adams & Co.
 " Shovel, bronze medal—Hussy Binnm & Co.
 " Track level, bronze medal—Cramer, Adams & Co.
 " Nut lock, silver medal—Van Kuren Elastic Nut Lock Co.
 " Scraper, silver medal—L. Pennock & Sons Co.
 " Track gauge, bronze medal—Cramer, Adams & Co.
 " Spikes (one keg), bronze medal—W. Goldie.
 " Switch, silver medal—Gray Switch Co.
 " Switch lock, bronze medal—Post & Co.
 " Switch stand, bronze medal—Fairbanks & Co.
 " Track broom, bronze medal—Phoenix Steel-Wire Broom & Brush Co.
 " Barrow, bronze medal—C. W. Hunt.
 " Complete track joint silver medal—W. F. Gould.
 " Iron fence post, bronze medal—American Iron Post Construction Co.
 " Ballast unloader, silver medal—Bucyrus Foundry & Machine Co.
 " Tracklaying car, silver medal—Bucyrus Foundry & Machine Co.
 " Yard switch, silver medal—H. & Elliot.
 " Automatic railway for storing coal, etc., silver medal—C. W. Hunt.
 " Hoisting rope, bronze medal—G. B. Carpenter & Co.
 " Tie bar, bronze medal—Morden Frog & Crossing Co.
 " Device for preventing derailment of cars, bronze medal—Jeanty Denechaud.
 " Brace or head chair for switches, bronze medal—Weir Frog Co.
 " Radway plow, bronze medal—Kilbourne & Jacobs Mfg. Co.
 " Snow-plow, gold medal—Hawley Steam Snow Excavator Co.
 " Crane, gold medal—Industrial Works, Bay City, Mich.
 " Derrick, silver medal—Yale & Towne Mfg. Co.
 " Car truck shifting apparatus, silver medal—R. H. Ramsey, Phila.
 " Culvert pipe, silver medal—Blackmer & Post, St. Louis, Mo.
 " Automatic danger signal, silver medal—Thos. H. Gibbons.

DEPARTMENT D. METALS.

Best car wheel iron, gold medal—Barnum, Richardson & Co.
 " Flanging iron, silver medal—Eureka Iron Co.
 " Boiler plate (iron) silver medal—Eureka Iron Co.
 " Display iron ores, gold medal—Barnum, Richardson & Co.

DEPARTMENT E. CLASS NO. 1—STATION AND OFFICE APPURTENANCES.

Best baggage barrow, bronze medal—Penfield Block Co.
 " Baggage check, silver medal—W. W. Wilcox.
 " Engraved folder, silver medal—Rand, McNally & Co.
 " Display of general office printing, silver medal—Rand, McNally & Co.
 " Dating stamp, bronze medal—B. B. Hill Mfg. Co.
 " Canceling stamp, bronze medal—B. B. Hill Mfg. Co.
 " System of passenger tickets, silver medal—Rand McNally & Co.
 " Desk for railway offices, silver medal—A. H. Andrews & Co.

PUMPS AND WATER-STATION APPLIANCES.

Best steam pump for water-station, gold medal—Fairbanks, Morse & Co.
 " Hand pump for water station, bronze medal—Fairbanks, Morse & Co.
 " Hydraulic ram, bronze medal—J. B. Clow & Co.
 " Track scale, gold medal—Fairbanks, Morse & Co.
 " Platform scale, silver medal—
 " Water tank, silver medal—U. S. Wind Engine & Pump Co.
 " Water tank fixtures, silver medal—J. N. Poage.
 " Wind-mill for water stations, silver medal—Fairbanks, Morse & Co.
 " Freight or warehouse truck, bronze medal—Fairbanks, Morse & Co.
 " Silver service for private car, silver medal—Railway Age Publishing Co.
 " Letter file, bronze medal—Cameron, Amberg & Co.
 " Money bag for transporting specie and currency, bronze medal—W. H. Sanford.
 " Safety plate for frogs, bronze medal—Black & English.
 " Type writer, silver medal—E. Remington & Sons.
 " Telegraph and telephone wire, silver medal—Roebling Sons & Co.
 " Ticket case, silver medal—L. J. Blades.
 " Letter press, bronze medal—Fairbanks, Morse & Co.
 " Display of registering devices, bronze medal—Beadle & Courtney.
 " Baggage check holder, bronze medal—T. Abbott.
 " Ticket holder, bronze medal—W. B. Van Amringe.
 " Watch case for railway use, silver medal—Hagstoz & Thorpe.
 " Anti-dust and water-proof watch case for railway use, silver medal—Giles Bros. Mfg. Co.
 " Conductor's and engineer's watch, silver medal—Giles Bros. Mfg. Co.
 " Tower clock movement for depot, silver medal—Giles Bros. Mfg. Co.
 " Anti-magnetic shield for watches, bronze medal—Giles Bros. Mfg. Co.
 " Portable chronometer, silver medal—Giles Bros. Mfg. Co.
 " Station indicator and clock combined, bronze medal—J. C. McKenzie.
 " Station train directory, silver medal—Wheeler & Wilson Mfg. Co.
 " Station indicator for trains, bronze medal—Wheeler & Wilson Mfg. Co.

DEPARTMENT G.

OILS, VARNISH AND PAINTS.

Best display of passenger car body colors, including samples of work, gold medal—F. W. Devos & Co.
 " Display of freight car body paints, including samples of work, silver medal—Carey, Ogden & Parker.
 " Display of wood filler, including samples of work, silver medal—Bridgeport Wood Finishing Co.
 " Lard oil, silver medal—F. S. Pease.
 " Lubricating oil (passenger car), silver medal—F. S. Pease.
 " Lubricating oil (freight car), silver medal—F. S. Pease.
 " Headlight oil, 175° fire test, silver medal—F. S. Pease.
 " Lamp oil, 300° fire test, silver medal—F. S. Pease.
 " Valve oil, silver medal—F. S. Pease.
 " Car grease, bronze medal—F. S. Pease.
 " Oil tank with pump, bronze medal—F. C. Wilson & Co.
 " Display of paint brushes, silver medal—F. W. Devos & Co.
 " Surfaces, silver medal—Murphy & Co.
 " Lamp and flag holder, bronze medal—F. W. Coolbaugh.

DEPARTMENT H.

MISCELLANEOUS.

Best rubber belting, silver medal—Hamilton Rubber Co.
 " Conductor's ticket punch, silver medal—L. O. Crocker.
 " Rubber hose, bronze medal—Hamilton Rubber Co.
 " Brake hose, bronze medal—
 " Track signal (torpedo), bronze medal—F. Munn (Pettibone & Mulliken, agents).
 " Surveyor's transit, silver medal—W. Jordan & Son.
 " Surveyor's field glass, bronze medal—L. Manasse.
 " Display of surveyor's instruments, gold medal—Keuffel & Esser.
 " Variety engineer's drawing tools, bronze medal—L. Manasse.
 " Engineer's level, bronze medal—W. Jordan & Son.
 " Engineer's barometer, bronze medal—L. Manasse.
 " Set engineer's railway curves, bronze medal—Keuffel & Esser.
 " Leveling rod, bronze medal—Keuffel & Esser.
 " Prismatic compass, bronze medal—L. Manasse.
 " Train badge, bronze medal—W. W. Wilcox.
 " Time detector, bronze medal—E. Imhauser.
 " Electric signaling device for block or other signals, gold medal—Union Switch & Signal Co.
 " Semaphore, silver medal—Corning Glass Mfg. Co. (Adams & Westlake Mfg. Co., agents).
 " Registering devices, silver medal—Beadle & Courtney.
 " Ventilated ceiling, silver medal—John Stephenson Co. (Limited).
 " Time detector electric clock and register, silver medal—Western Electric Co.
 " File (cast iron), silver medal—M. A. Howell.
 " Fire-proof insulating, bronze medal—Chicago Insulating Co.
 " Electric motor for stationary purposes, gold medal—United States Electric Light Co.
 " Electric railway system, gold medal—Electric Railway Company of United States.
 " Drawing-table, bronze medal—Keuffel & Esser.
 " Dynamograph and track inspection car, gold medal—P. H. Dudley.
 " Depot signal, silver medal—Union Switch & Signal Co.
 " Key relay and sounder complete, silver medal—Western Electric Co.
 " Display telegraph instruments and supplies, silver medal—Western Electric Co.
 " Stop signal lamp, bronze medal—Underhill, Osborne & Co.
 " Display of signal lamps, silver medal—Underhill, Osborne & Co.
 " Locomotive signal lamp, bronze medal—Underhill, Osborne & Co.
 " Railway surgical dressings, bronze medal—Seabury & Johnson.

DEPARTMENT I.

STREET RAILWAY APPLIANCES.

Best iron wheel, silver medal—Baltimore Car Wheel Co.
 " Car, gold medal—J. G. Brill & Co.
 " Car spring, silver medal—French Spiral Spring Co.
 " Draw spring, bronze medal—French Spiral Spring Co.
 " Bell cord and fixtures complete, bronze medal—John Stephenson Co. (Limited).
 " Fare box, silver medal—J. B. Slawson.

Best end lamp, bronze medal—John Stephenson Co. (Lim.).
 " Haul rail bracket, bronze medal—John Stephenson Co. (Limited).
 " Journal bearing, bronze medal—John Stephenson Co. (Limited).
 " Door locks, bronze medal—John Stephenson Co. (Limited).
 " Registering punch, bronze medal—Beadle & Courtney.
 " Registering device, bronze medal—E. Chesterman, "Portable."
 " Sheave for sliding door, bronze medal—John Stephenson Co. (Limited).
 " Door handle, bronze medal—John Stephenson Co. (Limited).
 " Life guards, silver medal—John Stephenson Co. (Limited).
 " Street car truck, silver medal—Suspension Car Truck Company.
 " Street car switch, bronze medal—A. L. Johnson.
 " Street car turn table, silver medal—Wm. Wharton, Jr. & Company.
 " Street car crossing, silver medal—Wm. Wharton, Jr. & Company.
 " Stationary registering device, silver medal—Lewis & Fowler.
 " Street car axle box, silver medal—John Stephenson Co. (Limited).

MISCELLANEOUS AND UNCLASSIFIED.

Best tube welding machine, bronze medal—Manning, Maxwell & Moore.
 " Cupola, silver medal—Colliau Furnace Co.
 " Malleable iron castings, bronze medal—Cleveland Malleable Iron Co.
 " Fire hose, bronze medal—Eureka Fire Hose Co.
 " Fire clay brick, bronze medal—Denver Fire Brick Co.
 " Power blower, silver medal—Boston Blower Co.
 " Power pressure blower, silver medal—Wilbraham Bros.
 " Portable forge, bronze medal—Buffalo Forge Co.
 " Hand blower, bronze medal—Buffalo Forge Co.
 " Cold pressed nut, silver medal—Hoopes & Townsend.
 " Display of nuts, bolts, rivets, etc., gold medal—Hoopes & Townsend.
 " Copper boiler & flues, silver medal—American Tube Works.
 " Seamless copper pipe, silver medal—American Tube Works.
 " Seamless brass pipe, silver medal—American Tube Works.
 " Elevator buckets, bronze medal—B. F. Gump.
 " Rawhide belting, silver medal—Chicago Rawhide Mfg. Co.
 " Cotton belting, silver medal—Gandy Belting Co.
 " Boiler and Pipe covering, silver medal—Shields & Brown.
 " Hot pressed nut, silver medal—J. H. Sternburgh.
 " Seat frame, silver medal—Hale & Kilburn.
 " Head linings "wood," silver medal—Hale & Kilburn.
 " Upholstering, silver medal—Hale & Kilburn.
 " Berth and seat springs, silver medal—Hale & Kilburn.

The Convention of the American Society of Civil Engineers.

The members of the American Society of Civil Engineers, to the number of about 150, with 90 ladies, rendezvoused at Chicago on Thursday, Friday and Saturday of the week before the convention, en route to St. Paul to attend the Fifteenth Annual Convention of the Society.

The members while at Chicago visited the Exposition of Railway Appliances, which amply repaid them for all the time which they were enabled to devote to its examination. They also examined the cable system of cable traction (Hallidie's patent) in use on some 10 miles of double-track street railway in Chicago, which was found to be a great success; they also visited Pullman as the guests of the Engineers' Club of the Northwest.

The party left Chicago on Monday at 7.30 a. m. on a special train furnished by the Chicago, Milwaukee & St. Paul Railway Company, which was run through to the Hotel Lafayette at Lake Minnetonka, which was the headquarters during the meeting, without transfer. The train consisted of a baggage car, dining car, six coaches, a Pullman sleeping car, and an officers' car, and it was quite comfortably filled. The meals en route—dinner and supper—were taken in the dining car, in relays of 40, which were so admirably managed by the Committee that all were satisfied, without confusion or difficulty.

The train reached St. Paul at 10 p. m. and Lake Minnetonka at 11.30 p. m.

This hotel, which belongs to the St. Paul, Minneapolis & Manitoba Railway Co., is beautifully situated on Lake Minnetonka, about 20 miles from Minneapolis, and here all the members and their ladies were comfortably accommodated.

FIRST DAY.

On Tuesday at 9 a. m. the members were taken by special train on the St. Paul, Minneapolis & Manitoba road to St. Paul, where the sessions of the Convention were to be held.

On Tuesday, June 19, the society met in the Senate Chamber of the State Capitol at 12 noon.

The members were welcomed in an address by Gov. Hubbard, of Minnesota, which was replied to on behalf of the society by Geo. S. Greene, of New York, temporary Chairman. Mayor O'Brien, St. Paul, then made a welcoming address on behalf of the citizens of St. Paul, which was pleasantly received by the members.

The Convention was then organized by electing Mr. D. C. Sheppard, of St. Paul, Chairman.

A number of communications, invitations, etc., were received and appropriately referred.

The Secretary then read the programme of the meeting and the list of papers to be presented.

The first paper read was by Col. F. W. Farquhar, U. S. Engineers, on Building a Dyke at the Falls of St. Anthony.

This was followed by a paper on the Cost of Steam Power, by Mr. Charles E. Emery.

The Convention then adjourned until the next day. In the afternoon the members were taken around the city in carriages.

SECOND DAY.

The convention was called to order at 10.30 a. m., and some additional invitations were disposed of.

Mr. Emery's paper was then discussed by Messrs. J. B. Francis, E. Meier, Holloway and others, the author responding to their criticisms.

Col. Farquhar's paper was discussed by Mr. Collingwood and by Major Allen, U. S. Engineers, who gave a description of the government work at St. Anthony's Falls.

Prof. T. Eggleston then read a paper on Accident to Steam Pipes resulting from the use of Blast Furnace, or Mineral Wool.

This was discussed by Mr. Emery and others.

A paper on Pontoon Bridges was read, by Mr. John Lawler, and discussed by Messrs. W. P. Shinn and D. J. Whittemore.

Mr. G. Lindenthal read a paper on Rebuilding the Monongahela Bridge at Pittsburgh, on which Mr. F. Collingwood made some remarks, Mr. Lindenthal replying.

Before adjournment each member of the society received a souvenir of its meeting in Minnesota, in form of a book containing a number of views on and about St. Paul and Minneapolis, and a brief description and historical sketches of the two cities. This was prepared by the joint local committee.

THIRD DAY.

The convention met at 11 a. m. on Thursday, June 21. A paper on the Water Power of the Falls of St. Anthony, by J. F. Frizell, was read and discussed by Mr. Francis.

A paper on the "Current Meter, together with a Reason why the Maximum Velocity of Water flowing in Open Channels is below the Surface," by F. P. Stearns, was read by title.

A paper on Meteorological Investigations and the Determination of Minute Helical Errors in Measuring Screws, by Capt. O. E. Michaelis, Ordnance Corps, U. S. A., was read.

Dr. Eggleston, from the Special Committee on Standard Time, appointed at the meeting of the society, held in New York in January last, made a report to the effect that the Committee had obtained a general expression of opinion from men prominent as engineers, railway managers and operators, and others in all parts of the United States and Canada, and found that exceptional unanimity prevailed with respect to the fundamental principle which should govern in the adoption of a system of standard time for the whole country; and the present meeting of the society, in the great upper valley of the Mississippi, seemed to be a peculiarly appropriate occasion for directing attention to the benefits to result from a comprehensive time system based on the principles which commended themselves to approval so general. In attending this convention many of the members must have experienced that the railways over which they traveled within a limited distance of this city are run by three different standards, viz.: Chicago time, St. Louis time and St. Paul time. These various local times lead to various inconveniences which would be entirely obviated by a unification of standards. If a compromise could be effected by the railway authorities, and they were to adopt a mean between the times of Chicago, St. Louis and St. Paul as a common standard for all the railways in this part of the United States, great convenience would undoubtedly result. The managers of the transcontinental railways, who have been heard from, cordially sustain the system of standards which have been suggested, and have agreed to adopt them in the running of trains. In conclusion, the Committee say that the time is near at hand, if it has not actually arrived, when definite action should be taken by legislation, or otherwise, to establish a system of standard time for general use throughout the country. The governing meridians proposed are each to be an integral number of hours from the prime meridian of the world. The report was accepted and the committee continued.

Mr. D. J. Whittemore, Chief Engineer of the Chicago, Milwaukee & St. Paul road, read a brief paper on the use of the Nasmyth steam pile-driver, giving the result of its operations in driving piles in foundations for masonry at La Crosse and Sabula bridges, and for elevator foundations at Milwaukee. A specimen of the head of a pile, which had been sawed off, was exhibited. It was taken from a pile driven at Sabula, just below the ring support at the head of the pile, and the friction produced by the wood fibres working on each other, under the repeated blows of the ram, was sufficient to ignite and burn the heart of the head of the pile quite across. The pile was of green Norway pine.

The convention took a recess at 12:40 p. m., and a business meeting of society was held, when the following committee was appointed:

Nominating Committee—D. C. Sheppard, Chas. Hennary, C. C. Martin, F. Slataper, A. Fteley.

The Committee on Uniform Tests of Cement, by D. J. Whittemore, reported progress. The report was accepted and committee continued.

The Committee on Preservation of Timber, by the Secretary, in absence of the Chairman, made a report of progress, and was continued.

The Sub-Committee in obtaining Congressional Aid for Prosecuting Tests of Structural Material reported progress by O. E. Michaelis, Chairman. The report was accepted, and committee continued.

The meeting adjourned at 2 p. m., and the convention was again called to order.

Resolutions of thanks for courtesies received were adopted, and the convention adjourned.

After adjournment the members of the society rode out to Fort Snelling and Minnehaha Falls. On arrival at Fort Snelling the party was received on behalf of Gen. Terry by Lieut. A. B. Johnson, of his staff; Lieut. Taber, the Chief Engineer of the department, and other officers, who pointed out the chief objects of interest and placed at their disposal a number of ambulances. But the time was so limited that it was impossible to visit the principal points, and after a brief inspection of the old fort on the cliff, the engine bell sounded the signal for all aboard for Minnehaha. At Minnehaha a longer stop was made, enabling all to view this beautiful waterfall, of which all had heard. From there the train proceeded to the railroad bridge across the Mississippi, which was examined by the members of the Society with interest. From there they proceeded to Minneapolis, and thence to the Hotel Lafayette at Lake Minnetonka. In the evening the entire party enjoyed a moonlight ride on Lake Minnetonka on board the steamer "City of St. Louis," at the invitation of Gen. W. D. Washburn.

FOURTH DAY.

On Friday, June 23, the convention met in Minneapolis and was formally welcomed to that city by the Mayor and others. Mr. C. F. Hatch, of Minneapolis, was chosen Chairman for the day.

Mr. Wm. Metcalf read an address in place of the President's address.

The Secretary read at the request of W. P. Shinn Mr. O. Chanute's paper in discussion of Mr. Shinn's paper on railway efficiency. Mr. Wm. P. Shinn read a paper on the subject "How can Railways be made more efficient in transportation of freight," on the conclusion of which he read letters from F. M. Luce, Car Accountant Chicago & Northwestern, and Mr. John B. Jervis, both indorsing the views expressed in the paper.

[These papers have been already published.]

The convention adjourned *sine die* at 12:30 p. m.

After adjournment the members were taken to various points in the city in carriages.

In the evening the annual dinner was held at the Hotel Lafayette, a large number of guests being present. Hon. W. D. Washburn presided, and after dinner speeches were made by Messrs. Lawler, Bennett, Delano, Metcalf and others.

On Saturday a large number of the members went by steamboat to Stillwater, viewing the government works on the river and other points of interest. From Stillwater the party went by train to White Bear Lake, and thence to Lake Minnetonka, whence most of them dispersed to their homes.

MASTER MECHANICS' ASSOCIATION.

Sixteenth Annual Convention.

We give herewith several of the reports presented by committees of the Master Mechanics' Association at the recent convention in Chicago. These reports lack of space compelled us to omit from the report of the convention published last week.

APPLICATION OF THE INDICATOR TO LOCOMOTIVES.

During the past ten years the efficiency of stationary and marine steam engines has been increased fully 25 per cent., which fact can be truthfully attributed to the liberal use of the steam engine indicator. This little instrument has been called the engineer's stethoscope, because it enables the engineer to see the action of the steam within the cylinder. The information thus obtained has greatly aided the builders of steam engines in correcting their proportions, and so successfully that the economy of their performance is in many instances remarkable. Why should not this apply to locomotives? It is very pleasing to know that upon some railroads the advantages of a free use of the indicator are greatly appreciated. There was never as many indicators in use as there is to-day, and I will assert that there would be more but for misrepresentation that has been sustained by unjust criticisms and too extravagant claims, all of which have tended to condemn its use. My principal object will be to explain some of the practical advantages and defects of the indicator, as well as its proper mechanical manipulation. I have been requested here to furnish something practical, and that is my intention.

At the outset, let it be understood that there are a great many things which the indicator will not do, which fact seems to have been overlooked in a great measure. But there are a few things which can be revealed only by the indicator, from which the engineer can draw reliable conclusions as to the course he may safely pursue to improve the working conditions of his engines and machinery. A year ago I wrote an article on a "New Indicator Rig for Locomotives," giving dimensions of its parts. That rig, with a clearer method of attaching the indicators, is here represented by the large engraving. It has been asserted that this mechanical movement is defective, so I have decided to show some diagrams taken from it and from other movements, to enable you to discriminate intelligently as to their several merits. The movements which I am about to describe are frequently used by engineers for giving motion from the cross-head to the paper drum of the indicator. One of the most common of these movements is shown in fig. 2. It consists of a lever *G* suspended from the pin *D*. From the centre of pin *D* to the centre line *H* of cross-head is 36 in. A grooved segment *E* for giving motion by a chord to the paper drum, is fastened to the top of the lever. The radius of this segment is sufficient to give the required length of diagram. This combination has been used for years by some prominent engineers, by whom it has been recommended. It is nevertheless one of the most erroneous motions for indicator purposes that has ever been used, as will appear presently. The length of this lever is constantly varying and affects the accuracy of the diagram, which errors are aggravated by a short lever. The longer the lever the less the errors. Hence a lever with a slotted end of eight or nine feet upon an engine having a stroke of 36 in. to 40 in., would work well enough in practice. The movements herein alluded to all have a lever 36 in. long and a stroke of 24 in. The diagrams are all full-sized as they were taken.

Diagram 1, fig. 6, was taken from a movement like that shown in fig. 2, which shows the precise relative position of the cross-head to the indicator pencil at each inch of the stroke. By setting a pair of dividers to, say, three middle divisions of the diagram and testing the ends of the diagram it will be found that the dividers cover $3\frac{1}{2}$ divisions, or, in other words, when the cross-head will have traveled $2\frac{1}{2}$ in. it will by scale measurement indicate 3 in. upon the diagram. This is a position where the greatest accuracy is required, especially in engines that cut-off short, and yet the greatest errors occur in using this motion within $3\frac{1}{2}$ in. from the ends of the stroke. The reason for this will appear from the following test:

A fine Faber lead was placed in a hole through a thin strip of metal attached to the lever, so that it would describe the arc *AB* corresponding to a radius of 36 in. A piece of board was then attached to the cross-head in front of the pencil, and a piece of paper attached to the board. With a slight pressure the paper was brought in contact with the lead, and with one stroke of the cross-head the looped figure fig. 1 was produced. This figure was drawn by placing the lever at *B*, then bringing the paper in contact with the lead and moving the cross-head toward *A*, the lead beginning at the upper left hand corner of the loop and moving downward toward *C*, as shown in fig. 1; thence it moves to *D*, where the lever assumes a vertical position. Passing on, the pencil follows the direction of the arrow bisecting the other line at *C*, and stopping at *B*, the cross-head having arrived at the end of the stroke. It will be observed that the end of the lever travels $\frac{1}{2}$ in. each side of the dotted centre line *A*, which brings it that much short of the stroke at each end, or $\frac{1}{2}$ in. less than the entire stroke. This shortens the diagram, as shown in fig. 6. When the cross-head arrives within $3\frac{1}{2}$ in. of each end of the stroke, the lead will have reached *C*, which represents the centre line of cross-head. From this point it moves off rapidly toward *B*, producing a sharp curve, which is due to the rapidly changing length of the lever. The lead, to make a correct movement, ought to follow the dotted line *A* or nearly so. The reason why the spaces of the diagram *I* are unequal from the centre toward each end is now clear. Diagram *J* exhibits the effect of using a pitman connecting the lower end of the lever with the cross-head, as shown in fig. 3. This pitman *IJ* is 16 in. long, which is one-third the length of the lever *G*. A fine lead was placed in the pin *I*, which in one stroke of the cross-head drew the figure *F E*, fig. 1.

This curve has a radius of 16 in., the length of the pitman. Two strips of very thin brass were used in the place of the indicator cord *F* shown in figs. 2 and 3, to overcome all errors due to the stretch of cord. A number of diagrams were taken to verify the accuracy of the first. The dividers applied to diagram *J* will reveal slight errors in the last inch at each end, while the rest are practically correct. These errors are due to the segment which gives a uniform velocity of cord at all parts of the stroke. It will be observed that this motion is the same as that shown in the large engraving, and the one that I advocate as the best I have ever used, which will be explained hereafter.

Diagram *K* was taken with a movement like that shown in fig. 4, in which a pin *L* was placed in the end of the lever *G* and moves in a vertical guide *M*, attached to the cross-head. A fine lead placed in the pin *L* drew the straight line *G H*, fig. 1. It will be observed that the errors due to the slot and pitman connections with the end of the lever are thus entirely eliminated.

The faults discoverable by testing the diagram occur in the last inch at each end, which is due to the segment as described and the arc described by the lower end of lever. Diagram *K* is almost identical with *J*. The motion shown

in fig. 5 is like fig. 4, with this exception: A pitman *O*, 22 in. long was used instead of the segment *E*, corresponding to a cord attached to a pin *N* in the lever. A pitman was used to avoid the errors incident to the use of a chord. With this motion Diagram *L*, fig. 6, was taken. By testing it will be found that this diagram is almost identical with *I*, except that the spaces are nearer equal in the latter. Diagram *M* was taken with a pitman 6 in. long instead of 22 in., being in a proper proportion to the other parts, and shows an improved spacing. This, in practice, would involve the use of a pulley, which ought always to be avoided if possible, furthermore, a cord will stretch much more when it runs over a pulley than when no pulleys are used. By using the rig shown in the large engraving the cord is made quite short, and when necessary two cords may be run from the segment to indicators placed one upon the cylinder as shown and the other upon the cock in the steam-chest.

If cords are attached to pins or screws in the lever, the error due to improper squaring of the pins with the direction of cord will be found greater than those due to the use of a segment. I have found this true in practice. The movements for reducing the motion of the cross-head and transmitting the same to the paper drum of the indicator are not, however, the place to look for the greatest errors. Fig. 7 shows the variations in lengths of diagrams taken at the various speeds marked upon the several lines. These lines were taken with an old style of indicator still much used upon slow-running engines. At 425 revolutions per minute the fling of the drum was so great that I was very much afraid that the cord would break, as it became quite slack before the spring could overcome the inertia of the rotating parts.

The diagram, fig. 8, was taken with the same kind of indicator and by the same maker, but with this change: A half-pound of weight had been removed from the rotating parts. The result becomes very apparent by a comparison of these two diagrams. Another source of error is the vertical movement of the pencil as shown in Fig. 9. The scale *A* is 60 lbs. to the square inch. An indicator with a 60 lbs. spring was attached to a steam drum with an accurate test gauge by the side of it. Steam was turned on in lines *B*, were drawn at the several pressures marked upon them, advancing five pounds at a time from 0 up to 120 lbs. per square inch. Steam was then turned off and the pressure allowed to fall gradually, and the lines *C* drawn as the pencil descended. It will be observed that the pencil lagged behind 2 lbs. at the 115 lbs. line, 4 lbs. at the 110 lbs. line, and when it reached the 110 lbs. line it was 5 lbs. behind. This error continued until the pencil passed the 10 lbs. line, when it began to regain a portion of what it had lost, so that when the pencil reached the 5 lbs. line it was 3 lbs. behind, and at the 0 line it was behind $2\frac{1}{2}$ lbs. If allowed to cool down the contraction of the spring will draw the pencil still lower, so that the error will be reduced still further. I have found a similar result repeatedly with indicator springs, and these errors are of such a nature that they would escape the observation of an engineer in indicating the engine in the usual way. Some of the manufacturers of indicators are getting their springs to scale very closely, but their strength is gradually changing, so that it is hardly safe to rely upon the springs without testing them. These diagrams are exhibited to show the fallacy of depending upon accurately graduated scales to measure indicator diagrams. Scales to be used for that purpose should be made directly from the instrument, with the spring in place and under steam pressure in the manner described. Water or air pressure will not do, as the steam expands the spring, causing the pencil to change its position. You may readily see that a person attempting to figure the actual horse-power of an engine from diagrams taken with the spring used in making fig. 9 would show an excess of power. By the graduated scale, the pencil rose to 134 lbs., whereas by the test gauge it is shown to be only 120 lbs. Here is a discrepancy at once of 14 lbs., which would make a great difference upon a quick running engine. Furthermore, the spaces made by the lines are not equal. Test scales should always be taken from the springs both before and after the test, as spiral springs often take a permanent set, sometimes amounting to several pounds. The test diagram, fig. 9, shows an example of this character. By use the spring gradually gets weaker, until it finally breaks. Its life may be stated as a certain number of vibrations.

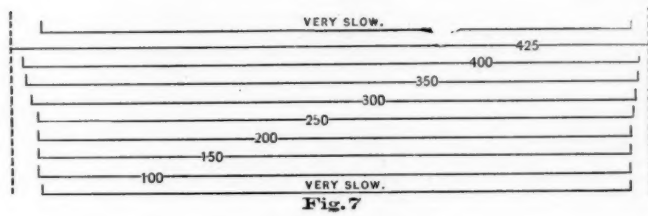
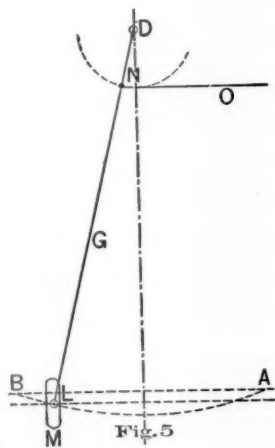
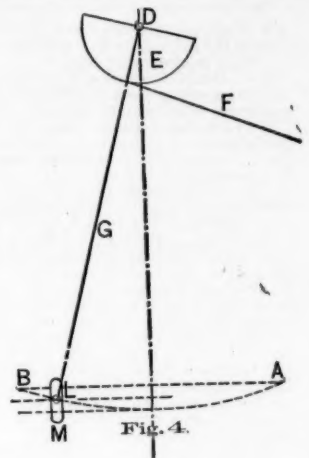
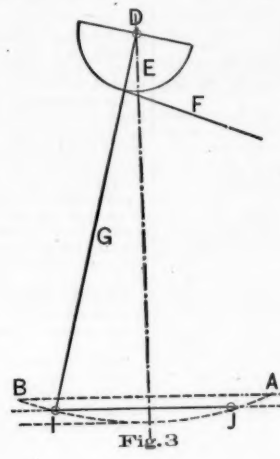
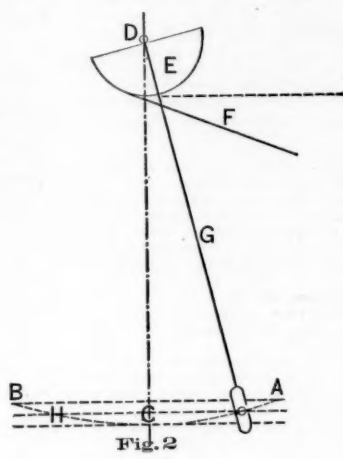
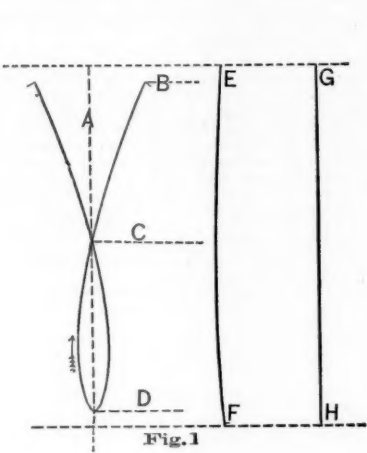
With all its faults I recommend a free use of the indicator, especially upon locomotives, not for the purpose of getting the actual horse-power, water consumption, or theoretical performance, but for the following reasons: To show the distribution of the steam in the cylinders, also wire-drawing in the passages, in consequence of their being too small. It will also show the improper setting of valves, for resistance, if there be too much or too little "compression," and the amount of back pressure. All of these matters are of importance in the economical working of locomotives.

The evaporation of locomotive boilers can be quite accurately arrived at by placing a Worthington water metre in the tank, to measure the water, and weighing the coal. I consider this the most reliable way. Whenever a locomotive gets to working badly and without any apparent reason, an application of the indicator will generally reveal the defect. When disease makes its appearance it should have a proper diagnosis before a prescription is made up. In the large engraving it is seen that I use a pull-up arrangement for the cord, instead of hooking on, a somewhat difficult process when a locomotive is running fast and a great waste of valuable time. The cord is attached to the indicator drum, passes into the groove of the segment upon the lever and out of the side as shown. Thence it passes through a screw-eye in the end of the stud bolt through the top of the lever, and the end secured to a screw or pin in the edge of the cylinder by means of a loop. To start the indicator drum, pull up the cord and slip the loop over the screw. To stop the drum slip the loop off the screw and drop it. The end of the cord should be tied to the screw to facilitate picking up the loop. There is no practical difference in the length of cords, owing to the stretch when the best braided linen cord is used. The Silver Lake people, of Boston, make a very excellent cord, which is free from stretch and is water-proof. The cylinders of locomotives should be tapped when they are in the shop and a $\frac{1}{2}$ inch nipple and elbow screwed into each end, as shown. By removing the plugs from the elbows the indicator pipes and other rigging may be attached, I have repeatedly completed the whole operation in one hour.

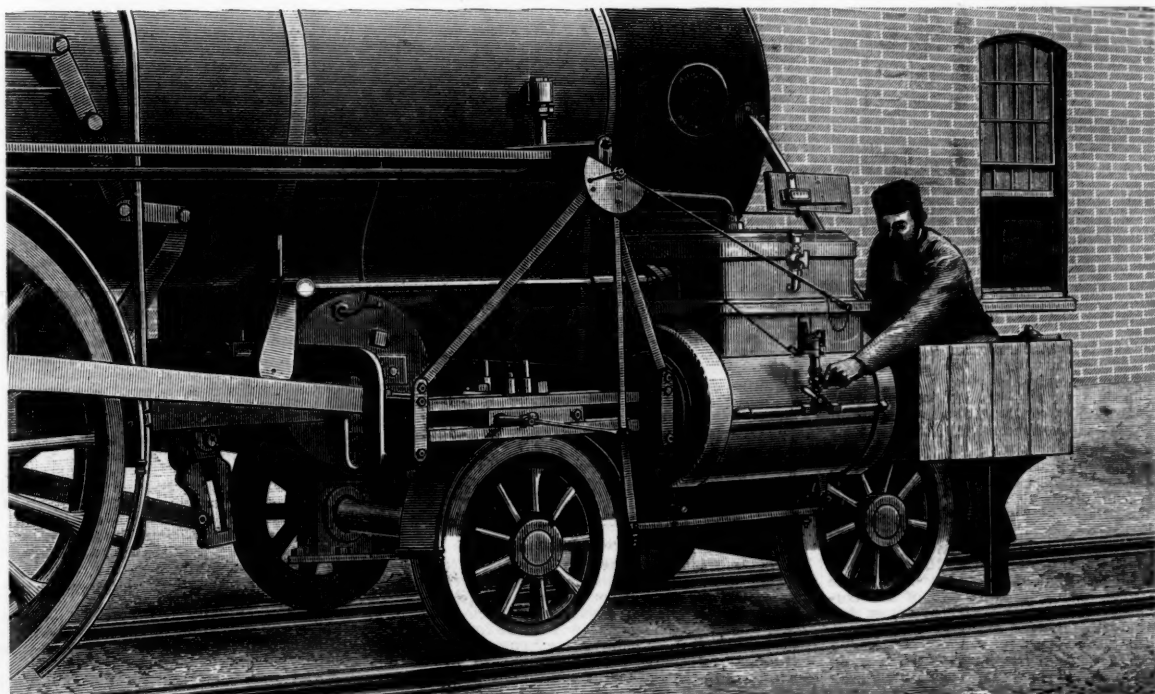
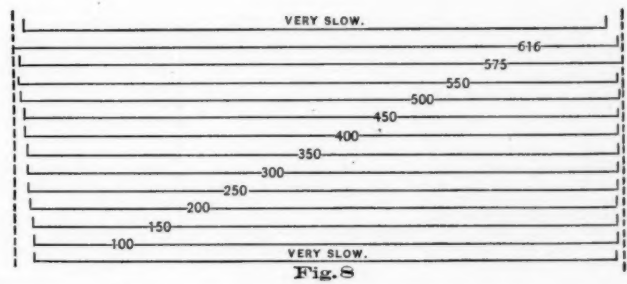
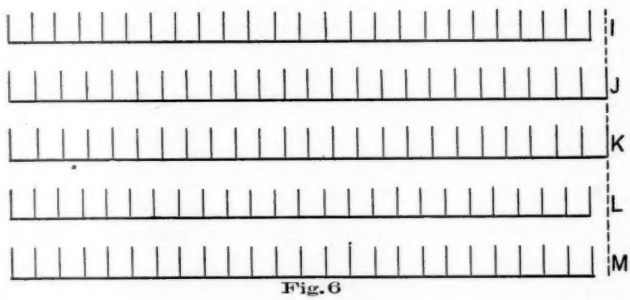
To make this work profitable for railroad companies, a bright young man should be selected, furnished with the necessary apparatus, and an accurate record kept of all his work. Much time and money are wasted because of a lack of records of slight changes made in valves and valve motion. Every master mechanic who has made a practice of indicating the locomotives placed in his charge to find out their defects will testify that it pays. Our late Vice-President, Howard Fry, was one of that class of persons.

LEWIS F. LYNE.

REPORT ON PREMIUMS TO ENGINEERS AND FIREMEN.
To the American Railway Master Mechanics' Association:
Your Committee, appointed to investigate and report upon the following subject, "The most practicable and best sys-



A	B	C
140	120	115
135	115	110
130	110	105
125	105	100
120	100	95
115	95	90
110	90	85
105	85	80
100	80	75
95	75	70
90	70	65
85	65	60
80	60	55
75	55	50
70	50	45
65	45	40
60	40	35
55	35	30
50	30	25
45	25	20
40	20	15
35	15	10
30	10	5
25	5	0
20	0	
15		
10		
5		
0		



APPLICATION OF THE INDICATOR TO LOCOMOTIVES.

tem of paying premiums to locomotive engineers and firemen to induce economy in working locomotives," beg leave to submit the following report:

Your Committee has assumed that it is practicable to induce economy in the use of fuels in locomotives by offering premiums to the men in charge.

We have found that in many cases premiums have been given for the engine running the cheapest for fuel, but as this is often unfair on account of the varying circumstances, and that light slow trains with specified hours per day make it easy for one engine upon a certain run to always make the best showing, as against others where the trains are heavy and fast, or received upon a division behind time and in had hours and uncertain days, together with many other hindrances which render it impossible for the men in the latter case to compete with the others, although the individual effort of the men may be greater, and deserving of greater credit than that of those who receive the premiums. A system of premiums should therefore be used which will give each individual the full benefit of his own efforts. This can only be done by fixing a line which is the average of good and bad management or work, and pay the men according to their standing. If a man goes much to the wrong side of the line he soon has it pointed out to him, and if he does not mend and show a better record, he will soon find that his services are not needed.

The keeping of records of the fuel used and publishing this record monthly to the men, without offering any premiums, is a great inducement to the men to try and save fuel and run cheaply.

The success of any system of premiums will depend almost entirely upon the accuracy of the records kept.

We, therefore, recommend a system which has been tried on one of our prominent trunk lines, and found to work very successfully.

This system is based upon the individual work of each crew or engine, compared with an average made for the same work done for a previous period of time.

Proper measures must be taken to get an accurate record against each engine of the amount of coal consumed, miles run by engine and average train.

As the fuel consumed should be represented in work done, we consider that the work unit of comparison should be number of pounds of coal per car drawn one mile, or car mile, this being more convenient than by ton miles.

Assuming that proper arrangements are made for measuring or weighing the coal accurately, the amount of coal charged up against an engine for a month is kept, and it is found that the engine has burned, say 100 tons or 200,000 pounds of coal during the month, and for the work done has run 2,500 miles and drawn an average train of 20 cars, making 50,000 miles for one car, or car miles.

We then have 200,000 divided by 50,000 car miles, or four pounds of coal per car mile. We now say to the engineer and fireman, we have found that for the past month, or any other given time, it has taken four pounds of coal for every car mile; now we will pay you as a premium one-half of all you save from that amount.

Our records for the next month show that the engine has run 3,000 miles, and has drawn an average train of 25 cars, or 75,000 car miles; but, instead of using 200,000 pounds of coal they have used 260,000 pounds or 3.46 pounds per car mile.

We then have a saving of 0.54 pounds per car mile, which, for 75,000 car miles, makes 40,500 pounds saved, which at \$2.50 per ton would be \$50.62 saved, one-half of this (\$25.31) to be divided between the engineer and fireman. A fair amount surely for the exercise of a little care and skill during the regular performance of their duties. After a time it may be found that the old way was so wasteful that the amounts made as premiums are too great, and a new basis can be made on which to make the comparison.

This is the method of dealing with the men when each runs his own engine, either on some stated train or in the rounds, each premium offered is for beating the previous work of each man himself, and will in no way compare or conflict with men who are running engines in different service and under different circumstances.

But many of the roads are working into and adopting the plan of running the engines in the rounds, turning them at the end of each trip as soon as the fires are cleaned and any necessary light repairs are done, and starting them with a new crew of men. By this method we would lose the individual effort on each engine, and a careless man would lose what a careful one made. To remedy this, the record must be kept with each man or crew, engineer and fireman, and will be found to be fully as fair as when kept against the engine, when run by one man. For example: Engineer Smith, with Fireman Jones, take out engine No. 12 to-day, with 4,000 pounds of coal on the tender. They are charged with this amount; upon the trip they get 8,000 pounds more, making 12,000 pounds. When they deliver up the engine, they have left 3,500 pounds, showing that they have used 8,500 pounds for the work performed, which is, we will say for example, 100 miles, with an average train of thirty cars, or 3,000 car miles.

The record for the month is kept against the crew of Smith and Jones. The coal used is charged, and the car miles credited, and at the end of the month, if the pounds per car mile come below what is the established average, the proper amount is paid. We have given a general outline of the system used upon one of our largest trunk lines, and with great success. We will now try and lay down a system for giving premiums for economical use of fuel, giving the necessary accounts, methods of measuring fuel, manner of keeping records of the car mileage, etc. Also copies of the necessary blanks, etc.

The first requisite in a system such as we have now under consideration is a proper fuel account, also the necessary trestles, coal pockets, scales, etc., for handling and weighing the coal accurately.

Assuming that all roads which are completed have the necessary arrangements for keeping accounts of all coal sent to a coal station, and the ordinary cranes, chutes, etc., for putting the coal into tenders in the most economical manner, each coaling station should be debited with the full amount of coal sent to it and credited with that delivered for use.

An engine arrives at the coaling station, and the engineer fills out blank No. 1, of which he keeps a copy on the stub, for the amount of coal delivered to the engine, and hands this to the man in charge of the pocket, and these are entered in a book provided for that purpose; the blanks are sent daily to the office of the fuel clerk, who keeps the daily record of the fuel with the men or engines, as the case may be. An inventory at the coaling station at the end of the month proves that the measurements and charges are correct, and the engineer having his stubs is able to know that he is not charged with coal he has not received.

In order to illustrate more clearly the manner of keeping these accounts, we will explain the proposed system by making an application to a supposed railway. The railway runs from B. to H., about 90 miles. The principal coaling stations are at B. and H., while at A. and C. there are arrangements for coaling when necessary. The average passenger train is 6 cars, for freight, 30 cars. The traffic usually runs loaded from B. and part empty from H. to B. Cars often

are drawn empty over a railway, and consequently if the record was kept of the number of cars without regard to loaded or empty, injustice might be done to those who, from one cause or another, should get more empty than loaded, while the reverse might be the case with others.

An adjustment between loaded and empty cars and other kinds should be made, and as a basis a loaded box car should be taken as a unit. It has been found that on all kinds of roads three empty cars are about equal in resistance to two loaded cars of the same kind, and the following adjustment should be made for the different kinds of cars:

All loaded 8-wheeled cars, box, stock, gondola, flat, etc., to be counted as a loaded car; three empties of the same kind to be counted two loaded cars; two 4-wheeled loaded cars to be counted one car; four empty 4-wheeled as one car; two passenger, baggage and express cars as three loaded cars.

As trains average, this adjustment has been found to be very nearly right. The reduction of passenger equipment to the freight basis is necessary, for often mixed trains are run.

After getting coal at B., in the manner set forth, the engineer starts with train for H., his train consisting of, say 30 loaded box cars. The conductor enters these on a blank (No. 2). On arriving at A., 30 miles from B., 20 more cars are added to the train, and the train goes through to H. The conductor's blank shows 30 cars drawn 90 miles, and 20 drawn 60 miles, making a total of 3,900 car miles for the trip. The engine had 12,000 pounds of coal when starting, and 1,000 pounds when arriving at H. At H. the engine received 12,000 pounds of coal, and the 1,000 pounds make 13,000 pounds.

Now on the trip back the cars are mixed. There are 20 loaded and 25 empty, leaving H., and at C., 30 miles from H., 10 more loaded and five more empty are added. The conductor enters on blank (No. 2) 20 loaded 90 miles, 10 loaded 60 miles, and 25 empty 90 miles, and five empty 60 miles, which makes 2,400 loaded and 2,550 empty car miles. The 2,550 being equal to 1,700 loaded car miles, we have 4,100 loaded car miles for the trip. The engine burns, say, 10,000 pounds of coal on the trip to B., and has made 8,000 car miles for the round trip.

Here we have a basis on which to award premiums for the round trip from B. to H. and return. The engine has consumed 21,000 pounds of fuel, and has accomplished in work 8,000 car miles, or an average of 2.62 pounds of coal per car mile.

The conductor's report (blank No. 2) is sent to the fuel clerk, and he has the data for the complete record of the mileage of the engine work done and fuel used.

The plan proposed gives approximately correct results as to the work done, and if at times trains run irregularly it is found that in about three months all have come around all right, and all have had equal show at the easy and hard circumstances.

Records kept in the manner proposed show that the greater average train gives the best results in earnings per car mile, even with a greater consumption of coal per engine mile, making it desirable for the engineer to take all the cars possible and to run as little light as possible. When engines are run the rounds the records are kept with the men and the coal charged where the engine is taken, and credit being given where the charge is relinquished.

For greater convenience and accuracy it is found better to measure the coal by cubic measure rather than by weight, as coal shrinks more in weight by exposure than in bulk; also, it will take up a large weight of moisture if the coal piles are not properly covered.

For convenience of measuring the coal upon the tender at the time a crew takes the engine in charge, the tenders should be marked, showing how full they are, with $\frac{1}{2}$ ton, 1 ton, $1\frac{1}{2}$ tons, etc., up to a full tender. The fireman would be required to bring his engine to the coaling station or engine house with the coal properly leveled off, so that the amount then on the tender can be properly noted by the pocket foreman or other person authorized to receipt for the coal (blank No. 3) when the engine is returned to the roundhouse: also by marking off the tank to show the amount of coal upon it, the engineer and fireman have a sure method of ascertaining whether the amount charged is correct. When the coal is only piled upon a platform and is shoveled from the platform or a car, the amount given to each engine can be ascertained by the weight marks upon the tender.

In this case the station agent, when the coal is taken, takes the checks or orders (blank No. 1) and returns it to the fuel clerk as a receipt for the coal, for which he is responsible.

When engines are set off for each passenger train, the comparison should be made with each train, but if passenger engines run the rounds with the men, a unit can be arrived at by the general average of all passenger trains.

When men run the rounds it often may happen that the same engineer and fireman might not go out together two trips in succession, and it will then be found necessary to keep the accounts with each man, both engineer and fireman.

Engineers will be required to fill out blank No. 4 at the end of each month, which shows the amount of coal used, engine mileage made by them. This is done for a check upon coaling stations.

By the system set forth each man will get credit for the work done by himself; it would teach economy, and the man would soon find it was for his own interest to keep the engines up in the best possible shape so that they would draw large trains, and with as little fuel as possible.

It is of course easier to adapt a system of this kind to a road where all the engines do exactly the same kind of work and were of exactly the same make.

But by offering premiums as proposed, and arriving at a proper basis for each kind of work done, there will be no trouble, as, for instance, the records will show that the average cost in fuel per car mile upon freight trains is only about half that for passenger trains over the same track, the difference being in the speed.

A different basis must be made for passenger trains than for freight.

When men run certain trains the basis must be on previous work on those same trains, while if they run the rounds an average for the whole is fair.

Attached are all the necessary special blanks for keeping such a record.

F. M. WILDER,
Chairman of Committee.

Electric Head Light.

A commission appointed in Bavaria to test the electric lighting apparatus for locomotives invented by H. Sedlacek, of Vienna, has reported that on a cloudy night the light made it possible to distinguish objects on or near the track, including the color as well as the form of signals, at a distance of 800 ft. in front of the locomotive, at which distance small newspaper print could be read by the light of the lamp. In passing stations the position of switches could be seen distinctly, and the light was visible for a distance of $2\frac{1}{2}$ miles. The light, it reports, burned very steadily, and was not disturbed by the motion of the engine. It is so arranged that on curves it turns automatically, so as to throw light on the track.

The Treatment of Sick Employes on the Denver & Rio Grande.

The Denver & Rio Grande Railway Co. has established a complete system for the treatment and relief of its employes who are suffering from accidents or sickness. The system is in charge of Dr. P. J. Bancroft, Senior Surgeon, at Denver, and at all the principal points on the line local surgeons are designated, to whom the employes are to go when necessary. Arrangements have also been made with hospitals at Denver, Pueblo, Salida, Durango and Salt Lake for the treatment of those who require special care and nursing.

The duties of the local surgeons are set forth in the following circular from the Senior Surgeon:

"1. To perform all duties in a manner which is most conducive to the interests of the company.

"2. To treat the invalid employe of the company with the same consideration, and in the same manner, as would be due to a private patient.

"3. To be specially prompt, in case of accident, in rendering all the aid possible, and to report all serious accidents to passengers, and all accidents to the employe requiring capital operations, by telegraph to the Senior Surgeon.

"4. Final and special reports will be made only in cases of injury. The special report will be made by the surgeon who makes the first visit. The final report will be made by the surgeon who has the care of the patient at the time of his discharge.

"5. In order that a just and equitable distribution of the benefits of the invalid fund may be made to the employes, surgeons have been appointed at all available localities, and provision made at such places to give medical attention to all of the sick and wounded, either in their homes or as out door patients. Other railway companies that have adopted the assessment system, in order to keep within their incomes, have been unable to give but little medical attention to employes, except in their hospitals, which are widely separated. As the plan of the Rio Grande Co. proposes much more extended benefits than are usually rendered, it becomes necessary to practice economy in every branch of the system, or the burden will be too heavy for the company to bear; hence surgeons will send only those cases to the hospitals which really need such care. Trivial surgical cases, as the loss of a finger, or temporary sickness of a light character, will be treated as outside cases. Whenever an employe in hospital has sufficiently recovered to need no further medical or surgical treatment, he should be discharged and returned to his former place of residence.

"6. Vaccine virus will be furnished surgeons on call, and every employe is entitled to free vaccination. If he neglects to avail himself of this protection, and is attacked with small-pox, he forfeits his rights to the benefits of the invalid fund.

"7. The attention of every surgeon is called to the conductor's emergency chest, and frequent examination of its contents should be made. When one needs refilling, it should be sent to I. C. Hubbell, storekeeper, at Burnham. Whenever any train is found without one, the fact should be reported to this office.

"8. At the end of the month, each surgeon should send promptly a report of all the cases treated by him during the month, including also the names of those noticed in special and final reports.

"9. Whenever an employe is sent to a company hospital, the surgeon in charge should be notified by telegraph, early enough to make arrangements for the reception of the patient."

The conductor's emergency chest contains: No. 1, Laudanum; No. 2, Ammonia Mixture; No. 3, Styptic Colloid; 1 Bi-Carb. Soda, 1 Styptic Cotton, 5 Needles with chamois; 2 Skeins Saddle's Silk, 1 Wax, 2 Sponges, 1 Adhesive Plaster, 6 Bandages, 1 Lint, 1 Scissors. Each train is furnished also with a sheet of directions for the use of these articles, and for the measures to be taken immediately in cases of accidental injury.

The regulations of the invalid fund are as follows:

It is hereby directed that from April 1, 1883, there shall be deducted from the monthly compensation of each employe, of every class, in the service of the Denver & Rio Grande Railway Co., the sum of 50 cents, for the purpose of creating an Invalid Fund.

2. The subscribers shall be entitled to medicines and medical attendance free of charge, or admission into one of the company's hospitals, hereinafter designated, when sick from diseases contracted in the service of the company, or from injuries sustained in the line of their duty.

3. If any employe does not desire to go to the hospital, he can receive medical attendance free at his home in any of the towns in which a company physician resides; but his board will be paid by the fund only when he goes to a company hospital, or one which the company patronizes.

4. An employe who desires medical treatment must first bring from his superintendent, or foreman, a certificate stating time, place and circumstances of his case to the nearest company surgeon, who will either, according to his judgment, administer such treatment as he may require at the place in which he resides, or forward him to a company hospital.

5. Whenever an employe quits the service of the company, he ceases to be a participant of the fund, and superintendents and foremen are forbidden to issue certificates to such a person.

6. Employes sick from venereal diseases, the result of intemperance, vicious habits, or old diseases contracted prior to entrance into the service of the road, will not be entitled to aid from the Invalid Fund.

7. Any employe who has a chronic disease which is liable to render him a burden to the fund, to an extent unjust to other employes, may be dropped from the assessment roll upon the recommendation of the Chief Surgeon.

8. No employe will be permitted to remain in the hospital at the expense of the fund, for a period exceeding four months, without consent of the Senior Surgeon, or General Manager of the road.

9. Employes who shall become intoxicated in hospital, or become insubordinate to the rules thereof, may be discharged, and dropped from the benefits of the fund at once upon the order of the Senior Surgeon.

10. Assessments to employes who labor a fractional portion of the month, will be made in the following manner: Those who work a less number of days than a half month, will contribute to the fund 25 cents; those who work over a half month, and less than a full one, will contribute the full sum.

INSURANCE FUND.

The company recommends that an Insurance Fund be established at an early date whereby every employe shall contribute 50 cents from his wages every month. This shall entitle him to \$25 per month for time actually lost from injuries sustained by accidents occurring in the line of his duties, or \$300 for the loss of a foot or hand, or \$500 for total disablement from labor of every kind, or \$800 payable to his heirs in the event of death. The surplus fund shall be allowed to accumulate until the amount reaches \$30,000. The employes of the Denver & Rio Grande Railway shall

"The roadway and track has required and received more than the average attention and expenditure, owing to the frequency and severity of the rain storms that have visited portions of Illinois and Iowa. The road, its structures and equipment are now in first-class condition."



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S. WRIGHT DUNNING AND M. N. FORNEY.

EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

LOCOMOTIVES AT THE CHICAGO EXHIBITION.

It would naturally be expected that an exhibition of railroad appliances as extensive and as representative in character as that which recently closed in Chicago would contain at least some recent inventions and new departures in locomotive construction. Visitors who entertained such expectations were not entirely disappointed, yet it must be confessed that the changes from ordinary practice exhibited there were not of a kind to kindle enthusiasm or excite very great expectations. The locomotives of standard types, exhibited by builders who are likewise regarded as standard, had very little to attract attention, excepting good workmanship and great weight and large dimensions. If compared with locomotives of twenty years ago, the plainness of finish of to-day would be a great contrast to the florid decoration which was then in vogue. The polished brass and bright colors have vanished, and now some of the progressive locomotive designers have attacked the decorative moldings of the dome, sand-box, etc., and it seems certain that they, too, must go. We may, therefore, expect a new era in the design of American locomotives, and in future their grace and beauty will depend only upon the skilful design of the machine itself, and not on any added decoration.

It may be noted that solid-end bushed coupling-rods seem at last to have established their superiority here, and a number of the engines exhibited had rods of that kind.

The extended smoke-box, too, was found on so many engines, both at the exhibition and elsewhere, that its general use now seems assured. The use of steel-tired truck and tender wheels is also steadily gaining ground, and seems to foreshadow the early abandonment of cast-iron wheels for such service.

Of the engines which were distinctly unlike the ordinary practice, the large twelve-wheeled engine built for the Central Pacific Railroad may be mentioned first. Besides its immense size and weight, one of its marked features is the valve-gear. This was illustrated in the *Railroad Gazette* of Oct. 20 of last year. That it is much more complicated than an ordinary link-motion is indicated by a glance at the engine or the engraving. Much greater economy in the use of steam is claimed for it than is possible with the ordinary link-motion. If this could be established conclusively by experiment, it would be a very important addition to our knowledge. With the information at present attainable, this claim can hardly be regarded as proved.

A Wooten passenger engine, which has heretofore been illustrated and described in these pages, was exhibited. The great interest which attached to it was from the fact that it was tried a number of times during the exhibition with bituminous coal and bituminous coal slack, and current report says with great success.

The Shaw four-cylinder engine was also on exhibition, and made a number of trial trips. The merits of this engine have been so persistently urged that we feel called upon to consider them, although it must necessarily be with some brevity.

The peculiarity of this engine, as most of our readers know, is that it has two cylinders on each side, the pistons of which are connected to cranks opposite to each other. The object aimed at is to balance the weight of the piston and other reciprocating parts of one cylinder by those of the other. In an ordinary locomotive, the weight of the reciprocating parts must be balanced by a revolving counterweight. While this effects a tolerably perfect balance in a horizontal direction, the revolving counterweight, for the reciprocating parts, is unbalanced vertically, and causes considerable disturbance and unsteadiness. With the Shaw engine the reciprocating parts of one cylinder balance the reciprocating parts of the other, so that no unbalanced counterweight is needed. That it accomplishes what is claimed for it is true, that is, it gives a nearly perfect balance of reciprocating parts; but the advantage resulting therefrom is probably much exaggerated. At any rate, the idea is an old one, and is illustrated and described in very Frenchy English in the translation of Couche's book on "Permanent Way and Rolling Stock." The author, or rather the translator, says:

"An English engineer, Bodmer, even pointed out a radical means of suppressing these oscillatory movements. This consisted in applying on each side of the engine two pistons working in contrary directions in the same cylinder, and acting on two cranks at 180°, placed in two vertical planes very near to each other. The principle of this expedient was disinterred, a score of years ago, by Mr. Haswell, engineer of the workshops of the State Railways at Vienna."

Mr. Haswell's engine is illustrated in figs. 7 and 8, plate LXXIII. of the book referred to, in which the author says:

"The illustrations give a general idea of the engine in which Mr. Haswell carried out Mr. Bodmer's idea (saving the substitution of two cylinders for a single one, receiving the two pistons going in contrary directions). The complication is somewhat less than would have been supposed by the simple enunciation of the principle. If, in effect, the organs of the driving machinery proper are double, those of the distribution are simple, thanks to an ingenious contrivance. Each steam-port corresponds by half its section to the face of one of the pistons, and by the other to the opposite face of the other piston. But although reduced, the complication for all that remains very considerable; the double crank works under very unfavorable conditions; lastly, the equilibrium is not perfect, the distance between the vertical planes passing through the axis of the two cylinders, leaving a couple subsisting on each side, which is, however, easily destroyed by the conditions of the system. The recoil is completely destroyed, it is true, but as that is in no way necessary, it is satisfactory from a purely theoretical point of view only, and out of all proportion with what it costs."

"Thus the experiment made on one engine, out of a series of twelve, simply resulted in the application of the ordinary counterbalance weight to the others."

Mr. Haswell's engine has a single driving axle in front of the fire-box, with two pairs of leading wheels between the driving-wheels and cylinders. The centre line of one of each pair of cylinders is above the other, so that the vertical planes through the axes of the two cylinders may be brought nearer together than they can be in Shaw's engine, where the cylinders are placed side by side.

The remarks of Mr. Couche apply as well to the Shaw engine as they did to Haswell's. The two are in fact identical in principle, and Shaw's engine, like Haswell's, will no doubt disappear without leaving any progeny behind it.

The Holland hydrogen gas engine was exhibited during the last days of the exhibition. It was literally in bad order, as it filled the whole locomotive shed with an offensive gas while the fire was kindled. The apparatus is unworthy of serious attention, and belongs to the class of mysterious inventions to which the Keeley motor and kindred systems belong. Although it has been before the public for several years, for some reason, best known to the promoters, the engine has never pulled a heavy train, and it is doubtful whether it ever will.

From what has been said, then, it may be inferred that so far as the Chicago Exhibition was inductive of the progress of the art of locomotive-building, no very radical departure from existing practice need be anticipated. The one thing which seemed to have in it the promise of practical success was the Wooten engine, with which it seems possible to burn the waste from bituminous coal mines as well as unmerchantable anthracite. The reports of the success of these engines with bituminous coal are, however, very diverse, and probably nothing but their continued use

for a long time in burning that kind of fuel will be conclusive.

The advance shown by the exhibition was generally in the direction of better proportion of parts and better workmanship. To these, then, apparently we must look for the present for whatever progress we make in locomotive construction in the future.

MAY EARNINGS.

When we reviewed the earnings of railroads in May, three weeks ago, we had reports from 61 roads, with 47,913 miles of road. These showed a decrease in earnings per mile from \$482 to \$474, or 1½ per cent. Our table of May earnings this week has reports from 84 railroads, with 59,264 miles of road—more than half of the total in operation in the United States—and their average earnings per mile have decreased from \$557 to \$543, or 2½ per cent. The 84 roads worked 5,569 (10.4 per cent.) more miles this year, and with it earned 7.6 per cent. more money, amounting to \$32,169,773. Only 19 of them had smaller total earnings this year, but 39 had smaller earnings per mile. The important decreases in total earnings were on the Central Pacific (which includes the Southern Pacific), the Chicago & Eastern Illinois, the Marquette, Houghton & Ontonagon, the Belleville line of the Alton & Terre Haute, and the Manitoba. Of these the Manitoba has an important increase in mileage, but it had extraordinary earnings last year, and has more than the average road this year. The Central Pacific probably suffered from lower rates; at least it is not easy to see why it should not have as large a traffic this year as last. Unlike the Pacific roads this side of the Sierras, it still gets the whole of the through Pacific traffic, and nearly all the California local traffic, which, as California had a great crop last year, should not be less than usual. There has been, however, a good deal of demoralization of through rates, and the earnings per mile of the Central Pacific, as we shall see later, were the smallest for four years.

The Chicago & Eastern Illinois probably suffered from the idleness of some of the Chicago iron works requiring smaller supplies of the coal carried by it. The Marquette, Houghton & Ontonagon, however, shows the greatest change—a decrease of more than one-half in its earnings from the extraordinary ones of last year. May was this year the first month that navigation was open and iron ore could be shipped from the lake terminus of this road; this makes an enormous difference in the traffic of this road. In April this year its earnings were but \$17,276; in May, \$81,845; and yet, as we have said, the May earnings were not half as great as last year. Iron ore is at the bottom of it all. Last year the demand was active, and the road was called upon to carry all that the mines could produce; this year not only is less ore shipped from Marquette and Escanaba, but there was a great stock accumulated at those ports before navigation was open, so that the railroads have not carried so large a proportion of the May shipments. Further, the railroads have to take their share in the lower prices of iron and get considerably less for hauling a ton of ore. All this on a road like the Ontonagon, which has little but ore traffic, makes a vast difference in its gross earnings, and doubtless a proportionally greater one in its net earnings. The same effect is caused on the Chicago & Northwestern, but as only about 155 out of its 3,590 miles of road are used for ore traffic, but a small portion of its earnings is affected. These fluctuations, by the way, illustrate what we said June 15 on "Traffic and Profits as Affected by the Iron Industry." A road like the Ontonagon would be much more stable in its income if it were part of a system through agricultural and lumber country.

The largest decreases in earnings per mile of other roads were 32.7 per cent. on the Denver & Rio Grande, 50.8 on the Des Moines & Fort Dodge, 28 on the Northern Pacific, and 22½ on the Toledo, Cincinnati & St. Louis—all of which have a large increase in mileage of new road.

The great gains in earning in May were:

	—P. c. of increase.—	
	In. total.	In. earn. per mile.
Ala. Gt. Southern.....	41.7	41.7
Hosac Tunnel & Western.....	32.7	32.7
Lexington & Big Sandy.....	48.1	48.1
Chic., Bur. & Quincy.....	25.4	13.6
Chic., Milwaukee & St. Paul.....	24.9	17.7
Flint & Pere Marquette.....	31.2	30.2
Gulf Col. & Santa Fe.....	83.4	40.6
Ill. Cen. & So. Div.....	20.5	20.5
Kan. C., Lawrence & S. R.....	81.4	73.7
Little Rock & Ft. Smith.....	37.6	37.6
Little Rock, Miss. Riv. & Tex.....	44.6	30.1
Central Branch.....	102.6	102.6
Western North Carolina.....	63.0	40.8
St. Louis & Cairo.....	33.1	33.1
St. Paul & Duluth.....	21.6	21.6

Here are 13 roads which made an increase of more

than 20 per cent. in earnings per mile, and 11 on which the gain was more than 30 per cent. Yet we see at in the aggregate the 84 roads suffered a decrease of 2½ per cent. in earnings per mile. The fact is, the roads with great gains are mostly small ones. The 11 that made an increase of more than 30 per cent. altogether have only 2,786 miles of road, and their aggregate gain was but \$385,605, which little more than balances the decrease on two of the great systems.

Of the 84 roads and 59,264 miles reporting 17 roads with 19,553 miles were west and southwest of Lake Michigan, as far as and including the Chicago & Alton on the east, the Hannibal & St. Joseph on the south, and the Missouri River on the west. This group includes the Chicago & Alton and the Hannibal & St. Joseph, which we have heretofore this year classed with the Southwestern roads, because they were not affected by snow blockades and some other causes which for some months had great effect on the railroads north of the latitude of Chicago.

All these 17 roads except the Marquette & Ontonagon, the Wisconsin Central, the Manitoba and the Des Moines & Fort Dodge have larger earnings this year. In the aggregate they show as follows for the two years:

	1882.	1883.	Inc. or Dec.	P. c.
Miles.....	17,060	17,553	493	2.9
Total earnings.....	\$8,781,289	\$9,728,694	\$947,405	10.9
Earn. per mile.....	515	555	40	7.8

More than half of the whole increase of mileage has been made by these roads, but a less proportion of the increase in earnings, and the decrease in earnings per mile is 3½ per cent., while for the whole country it is 2½—not a considerable difference.

Of the far Western roads we lack this month returns from the Union Pacific, the most important of them all, and its absence is not a sign that its earnings have been favorable. The three that report—the Atchison, the Denver & Rio Grande and the Central Pacific, all compare unfavorably with last year. The Denver, it is true, gains 4.2 per cent. in total earnings, but it does this with the great increase of 54.8 per cent. in mileage, and its decrease in earnings per mile from \$571 to \$384 (32.7 per cent.) is anything but favorable. The three roads in the aggregate show the following results:

	1882.	1883.	Inc. or Dec.	P. c.
Miles.....	5,872	6,435	563	9.6
Total earnings.....	\$4,132,459	\$3,894,691	-\$237,768	-5.7
Earn. per mile.....	704	605	-99	-14.1

The Atchison road is mostly in the agricultural portion of Kansas, where all crops were magnificent last year and wretched the year before. It should have earned much more this year on that part of its line, as is further indicated by its next neighbor, the Lawrence & Southern Kansas, which gained 73.7 per cent. in earnings per mile. Therefore its earnings further west were probably very much smaller this year than last, and affected much as the Denver & Rio Grande's have been.

The roads west and southwest of St. Louis, including in these all south of the Hannibal & St. Joseph, and west of the Mississippi as far as the plains and all Kansas roads, except the Atchison (a large part of which properly belongs in this group), 14 in number, have all made a gain but one, and in the aggregate they compare as follows with last year:

	1882.	1883.	Increase.	P. c.
Miles.....	7,373	7,944	571	7.7
Total earnings.....	\$2,888,880	\$3,539,290	\$650,410	22.5
Earn. per mile.....	392	446	54	13.8

This is a large gain, and these roads have been making decided gains all the year.

If we turn to the roads east of the Mississippi and south of the Ohio and Potomac, we find their aggregates for the two years to have been as follows:

	1882.	1883.	Increase.	P. c.
Miles.....	9,563	9,900	337	3.5
Total earnings.....	\$3,290,885	\$3,756,325	\$465,440	14.5
Earnings per mile.....	344	377	33	9.6

There are 20 of these roads that report, and all show an increase but one, whose decrease is two dollars. Their increase in earnings is much above their increase in mileage, and they have done positively and decidedly well, as they have heretofore this year.

We take next the central northern system, from the western termini of the trunk lines to Chicago and the Mississippi, including all roads reporting west of Pennsylvania, north of the Ohio and east of the Chicago & Alton Railroad and the Mississippi River, but also including the Wabash, which has a considerable mileage also in the two western districts we have named. The aggregate mileage and earnings of the 19 roads here that report were:

	1882.	1883.	Inc. or Dec.	P. c.
Miles.....	8,771	9,401	630	7.2
Total earnings.....	\$3,410,811	\$3,515,012	\$104,201	3.0
Earn. per mile.....	389	374	-15	-4.0

With an increase of 7.2 in mileage, these roads made an increase of but 3 per cent. in earnings, resulting in a decrease of 4 per cent. in earnings per mile, and many of these roads did not do well last year. This

district includes the western connections of the trunk lines, but none of them report. The Lake Shore and the Michigan Central have reported for the entire first half of the year a great gain. The roads reporting, with the exception of the Wabash, are chiefly small lines or systems, and should, it would seem, reflect fairly the condition of local traffic here. No less than 10 of the 19 have a decrease in total earnings.

We have reports from 11 Eastern roads, with 5,394 miles of road. Nearly three-fifths of the mileage and nearly four-fifths of the earnings are by two roads—the Pennsylvania and the Reading, and the road next in importance is the Northern Central. Altogether the report reflects much better the condition of the Pennsylvania and New Jersey roads than that of the New York and New England roads. Of the 11, all but one (the Reading) have an increase, and their aggregates are:

	1882.	1883.	Inc. or Dec.	P. c.
Miles.....	5,066	5,394	328	6.5
Total earnings.....	\$7,382,530	\$7,725,701	\$343,171	4.6
Earnings per mile.....	1,457	1,432	-25	-1.7

Hence the increase in earnings is less than the increase in mileage, but the decrease in earnings per mile is small.

Recapitulating, then, we find in the east a slight change, which cannot be called an improvement, in the country north of the Ohio as decided but not great decline; in the country west of Chicago an increase which lacks considerably of keeping pace with mileage; in the Far West a decided decline, in the South west and on the lines west of St. Louis a decided increase, and a still more decided one south of the Ohio and Potomac.

While the aggregate of the roads reporting shows this year a decrease of 2½ per cent. in earnings per mile, last year the 66 roads reporting had a decrease of 1 per cent., while in 1881, 55 roads reporting, had an increase of 3½ per cent. in average earnings per mile.

Below we give a table of the earnings per mile for seven successive years, or any three of them including the last two, of all the roads whose reports are attainable:

	1877.	1878.	1879.	1880.	1881.	1882.	1883.
Ala. Gt. South.....	105	105	105	105	105	105	105
Atch., T. & S. F.....	270	270	270	270	270	270	270
Bur., C. R. & N.....	195	195	195	195	195	195	195
Can. Branch.....	152	152	152	152	152	152	152
Can. of Ga.....	152	152	152	152	152	152	152
Central Iowa.....	223	223	223	223	223	223	223
Central Pacific.....	825	754	691	732	794	774	706
Chas., Col. & Aug.....	124	161	144	202	185	202	202
Ches. & Ohio.....	411	411	411	411	411	411	411
Chic. & Alton.....	516	516	516	516	516	516	516
Chic. & E. Ill.....	341	407	411	508	533	599	520
Chic. & N. W.....	509	708	665	815	671	650	591
Chic. B. & Q.....	506	772	676	734	602	515	585
Chic. M. & St. P.....	430	457	484	456	405	382	449
Cin., N. O. & T.....	527	620	620	620	620	620	620
C. Ind., St. L. & C.....	511	524	511	524	511	524	511
C. & A. & Col.....	228	194	223	224	243	300	307
Denver & R. G.....	252	286	286	457	746	561	384
Det. L. & Nor.....	455	455	455	455	455	455	455
Eastern.....	704	687	729	807	892	963	998
E. T. Va. & Ga.....	241	262	225	231	257	259	259
Ev. & T. H.....	389	389	389	389	389	389	389
Flint & P. M.....	317	386	505	505	505	505	505
Ch. Bay, W. & St. P.....	550	467	459	592	592	592	592
Hannibal & St. Jo.....	550	467	459	592	592	592	592
Houst. E. & W. T.....	524	570	522	572	576	564	549
Ill. Cen. in Ill.....	236	356	321	349	363	356	401
Ind. B. & W.....	313	465	465	404	360	329	337
Int. & Gt. N.....	159	158	166	182	273	338	323
K. C., P. S. & G.....	188	205	214	282	380	295	348
Lake Erie & S. K.....	242	265	242	265	245	256	256
L. R. & Ft. Sm.....	195	183	183	183	183	183	183
Long Island.....	491	510	570	491	510	570	510
Louisville & N.....	398	404	438	420	450	472	510
Mo., H. & Ont.....	807	2,025	844	807	2,025	844	844
Memphis & Ch.....	167	195	195	199	254	253	296
Mill. L. S. & W.....	204	263	277	324	437	308	419
Mo. Pac. & Tex.....	181	197	232	255	288	255	271
Mobile & Ohio.....	369	358	400	350	352	293	317
Nash., C. & St. L.....	612	651	687	651	687	732	729
N. Y. & N. Eng.....	289	292	306	307	349	433	454
Norfolk & W.....	978	974	1,012	1,428	1,446	1,550	1,550
Northern Cen.....	317	301	415	301	415	394	456
Ohio South.....	1520	1,402	1,490	1,826	2,040	2,103	2,089
Pennsylvania.....	1,440	1,380	1,361	1,651	1,689	1,703	1,697
Peoria, D. & E.....	264	246	329	304	380	348	393
P. & Reading.....	324	492	620	528	528	528	528
Rich. & Danville.....	513	523	732	415	586	493	493
St. L. A. & T. H.....	150	170	123	198	221	196	261
St. L. & Cairo.....	312	286	242	333	479	384	396
St. L. & S. F.....	423	395	442	509	609	722	634
St. L., I. M. & So.....	479	430	430	517	942	549	549
St. P., M. & Man.....	243	194	226	270	344	339	339
Scioto Valley.....	208	193	215	240	285	305	309
So. Carolina.....	208	295	251	282	376	341	394
Texas & Pac.....	208	295	251	282	376	341	394
Tol. Cin. & St.....	402	471	462	360	345	345	345
Vicks. & Merid.....	212	212	212	212	212	212	212
Wabash.....	402	471	462	360	345	345	345
Wis. Cen.....	212	212	212	212	212	212	212

Regard must be had for the companies which have made great additions of cheap, new road in reading this table, but on the whole nothing shows so well the progress of the railroads. Not a few, among which are the Alabama Great Southern, the Central of Georgia, the Charlotte, Columbia & Augusta, the Chesapeake & Ohio, the Chicago & Alton, the Cleveland, Akron & Columbus, the Eastern, the Flint & Pere Marquette, the Hannibal & St. Joseph, the Illinois Central in Iowa, the Louisville & Nashville, the Memphis & Charleston, the Norfolk & Western, the Northern Central, the Richmond

& Danville, the St. Louis & Cairo and the South Carolina have larger earnings per mile this year in May than in any other year for which we have reports. Except where there has been increase of capital, therefore, these roads must be doing decidedly well, and at all events their business shows a satisfactory growth.

For the five months ending with May, our table has reports from 79 railroads, with 56,083 miles of road. They have an increase over last year of 4,808 (9.4 per cent.) miles of road, and of 10.1 per cent. in earnings, bringing the latter up to \$151,292,294, and the average earnings per mile increased from \$2,679 to \$2,698, or 0.7 per cent. With the large increase of mileage this is a not unfavorable result, though last year was not a favorable one, and the average earnings per mile of the roads then reporting was 3½ per cent. less than in 1881. This year there are 15 roads which report a decrease in total earnings, while 29 have a decrease in earnings per mile. Eleven have an increase of more than 25 per cent. in earnings per mile; six a decrease of more than 15 per cent. For the names of the roads which have made important gains or losses, the reader is referred to the table.

The Recent Light Grain Movement.

The June grain movement has been disappointing. In June, if not earlier, we are accustomed to see a large part of the remaining surplus grain of the farmers sent to market. This year the movement was very light in May, and this was an additional reason for expecting a heavy movement in June. The receipts at the Northwestern markets were indeed much more than in May, but compared with previous years following an abundant harvest they do not make a good showing. The average receipts per week in April, May and June for successive years and the total receipts of these three months have been, in bushels:

	April.	May.	June.	Total.
1883.....	2,945,688	3,474,985	5,129,506	*51,329,028
1882.....	3,149,473	3,311,781	3,098,270	41,558,524
1881.....	3,405,876	7,409,697	7,409,697	70,225,270
1880.....	3,303,580	6,161,798	5,828,990	67,094,468
1879.....	2,812,725	3,770,332	5,243,909	52,551,775
1878.....	3,884,578	5,007,600	3,859,044	54,863,946
1877.....	2,297,724	2,702,788	2,336,606	31,875,077

* Estimating the receipts of the last week of June as equal to the average of the four previous weeks.

All these seasons except 1877 and 1882 followed abundant harvests, except that the corn crop was somewhat deficient last year—largely deficient in Illinois and Iowa, which are usually the largest producers. On this account last year, when the corn left in hand was very little more than required for home consumption, ought not to be compared with this year, when the June receipts at the Northwestern markets were 2,031,000 bushels (70 per cent.) greater. It is the comparison with the three previous years, when crops were abundant, that is really significant. We see that this year the receipts were 2,280,000 bushels (31 per cent.) less than in 1881, 700,000 (12 per cent.) less than 1880, and a little less than in 1879.

The total receipts for the three months were 10 millions more than last year, it is true, but that is not a great gain considering that the production of the previous harvest was 655 millions greater, and compared with 1881 there is a decrease of 20 millions (29 per cent.), and compared with 1880 a decrease of 15½ millions (23½ per cent.). The receipts are also a little less than in 1879 and 1878.

We said a few weeks ago that if the farmers were satisfied that there would be a fair crop of corn, they would doubtless market their surplus corn very freely in June. Corn, however, has been very backward, and a fair crop could not confidently be counted on. It is doubtless doing well just now, but it is very late, much as it was last year, when, however, good growing weather did not begin until after the first week of July. If the prospect improves, there will probably yet be an improvement in the summer corn movement.

But there has been one cause of a lighter movement in the last three months which we have mentioned before, but which has not been sufficiently considered. This is because the surplus was marketed in winter to an extent hitherto unknown. We recall the figures for the Northwestern receipts during the four months ending with March, which we published in our issue of April 13, as follows:

Year.	Bushels.	Year.	Bushels.
1873-74.....	39,612,254	1878-79.....	53,152,054
1874-75.....	32,080,929	1879-80.....	64,386,989
1875-76.....	36,649,809	1880-81.....	53,261,977
1876-77.....	34,173,567	1881-82.....	53,706,420
1877-78.....	45,470,885	1882-83.....	82,865,440

We repeat that one of the reasons, and a principal one, why the Northwestern markets have received 19 million bushels less grain in the last three months than in the corresponding months of 1881, is because they received 19½ millions more in the previous four

months. Counting since November last, the receipts, in millions of bushels, have been:

1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.
66.0	100.3	105.7	131.4	123.5	105.1	134.2

Thus the receipts this year for the seven months were larger than ever before, though but a trifle more than in 1880. If flour were counted, however, the excess this year would be considerable. The *Produce Exchange Weekly* reports the Northwestern receipts of flour and grain from Aug. 1 to June 23 for the last four years to have been:

	1882-83.	1881-82.	1880-81.	1879-80.
Flour, bbls....	8,026,885	7,182,339	7,978,821	5,986,272
Grain, bu.....	228,437,641	192,392,878	247,536,648	239,581,034

Total, bu. . . 267,258,023 224,713,403 283,441,342 266,519,238

The total movement is thus nearly the same this crop year as in 1879-80, and but 6 per cent. less than in 1880-81, although the fall movement in 1882 was very much less than in 1880 and 1879-71 millions, against 94½ and 95½.

It is then worth noting that the lighter movement recently may be due to the fact that there is not much in farmers' hands to move. They have marketed but 4,156,000 bushels less wheat since July last year than in 1880-81, and the crop was but 6,000,000 bushels greater, while the home consumption must have been 16,000,000 greater; and with a corn crop 188,000,000 less, they have marketed since January (the beginning of the corn crop year) 4,400,000 bushels more than in 1881, though 17,700,000 less than in 1880. We shall probably not see a heavy grain movement now until the new winter wheat begins to come forward, which will probably not be very early, because all markets, here and in Europe, are well supplied; though should corn improve greatly by the middle of July, there may be a considerable increase in the receipts of that grain. The railroads, however, and especially those east of Chicago, have little to complain of. The movement was extraordinary in the winter, when they carried nearly all of it and got 30 cents per 100 lbs. for it; and this was better for them than to have had it come since April, when the lake vessels get nearly two-thirds of it, and for the rest the railroads get but 25 cents per 100.

May Accidents.

Our record of train accidents in May, given in full in another column, shows for that month a total of 120 accidents, in which 28 persons were killed and 77 injured. The record is longer than in April, but shorter than that of any other month since July, 1882.

As compared with May, 1882, there was an increase of 26 accidents and of 4 persons killed, but a decrease of 9 in the number injured.

The record includes 42 collisions, in which 10 persons were killed and 40 injured; 73 derailments, in which 18 persons were killed and 33 injured, and 5 other accidents, in which 4 persons only were hurt. Seven of the killed and 22 of the injured in the collisions were railroad employes, as were all of the killed and 30 of the injured in the derailments, and all of the injured in the other accidents.

These accidents may be classed as to their nature and causes as follows:

COLLISIONS:	
Rear collisions.....	30
Butting collisions.....	11
Crossing collisions.....	1
DERAILMENTS:	
Broken rail.....	2
Broken frog.....	1
Broken switch-rod.....	2
Broken bridge.....	2
Spreading of rails.....	5
Broken wheel.....	3
Loose wheel.....	2
Broken axle.....	3
Broken truck.....	3
Accidental obstruction.....	6
Cattle on track.....	6
Land-slide.....	2
Wash-out.....	2
Wind.....	3
Misplaced switch.....	3
Purposely misplaced switch.....	12
Malicious obstruction.....	2
Unexplained.....	16
Other accidents:	
Cylinder-head blown out.....	1
Broken connecting rod.....	1
Broken eccentric rod.....	1
Car burned while running.....	1
Powder explosion.....	1
Total.....	120

Three collisions were caused by cars left standing on main track; two by mistakes in orders or failure to obey them; two by failure to use signals or observe them; one each by a train breaking in two, by a runaway engine and by a misplaced switch. An unusually large number of collisions are unexplained.

Of the broken bridges, one certainly and possibly two others failed on account of the weakening of the substructure by freshets.

A general classification of these accidents may be made as follows:

	Collisions.	Derailment.	Others.	Total.
Defects of road.....	12	12	12	36
Defects of equipment.....	2	13	3	18
Negligence in operating.....	40	12	2	54
Unforeseen obstructions.....	17	2	19	38
Maliciously caused.....	3	3	3	9
Unexplained.....	16	16	16	48
Total.....	42	73	5	120

Negligence in operating was thus the direct cause of 43.3

per cent. of the accidents, and this might probably be increased by several of those given as unexplained.

A division according to classes of trains and accidents is as follows:

Follows:				
<i>Accidents:</i>	Collisions.	Derailments.	Other.	Total.
To passenger trains.....	16	4	24	
To a pass. and a freight.....	13	1	13	
To freight trains.....	25	57	1	83
Total.....	42	73	5	120
<i>Casualties:</i>				
Killed by.....	10	18	2	30
Injured by.....	40	30	4	74
Total.....	50	48	2	100

This shows accidents to a total of 162 trains, of which 41, or 25.3 per cent., were passenger, and 121, or 74.7 per cent., were freight trains.

Of the total number of accidents 75 happened in daylight and 44 at night, while in one case the time is not definitely given.

The persons killed and injured were divided as follows:

	Killed.	Injured.	Total.
Employes.....	25	56	81
Passengers.....	3	21	24
Total.....	28	77	105
Per cent. of employes.....	89	73	77

Of the 42 collisions, 7 caused death and 14 injury, but not death; while of the 73 derailments 14 caused death and 10 other injury, while in two of the other accidents there were personal injuries. In all 21 accidents caused the death of one or more persons; 26 caused injury, but not death, while in 73, or 60.8 per cent. of the whole number, no serious injury is recorded.

The month was not altogether a favorable one, severe local storms and tornadoes having been the direct cause of a number of accidents, and probably the indirect cause of others, by injury done to the road-bed and structures. The record is, as compared with the same month in previous years, a very unfavorable one, and this was not due to the weather alone.

The number of collisions was not far from one-third of the total number of accidents. The number of butting collisions was unusually large, indicating rather an undesirable tendency toward an increase of accidents resulting from carelessness in management. This was not the result of overcrowded tracks, for the month was not one of unusual or extraordinary activity in traffic.

The same tendency may be noted in the large number of accidents—12 derailments and one collision, 13 in all—resulting from misplaced switches, which caused over 10 per cent. of all the accidents. This particular form of carelessness could surely be decreased by stricter discipline, even if it could not be altogether suppressed. In too many cases it is passed over altogether, and no serious effort is made to fix the blame where it belongs, and on roads where this happens the offense is sure to be repeated.

There were three malicious derailments, two caused by switches purposely misplaced, and one by obstructions placed on the tracks.

For the year ending with May the record is as follows:

	Accidents.	Killed.	Injured.
June.....	72	35	193
July.....	92	18	56
August.....	139	46	218
September.....	153	34	136
October.....	135	47	132
November.....	125	36	129
December.....	148	29	209
January.....	168	55	199
February.....	184	61	186
March.....	142	13	137
April.....	106	26	114
May.....	120	28	77
Total.....	1,585	428	1,786
Total, same months, 1881-82.....	1,324	408	1,358
“ “ “ 1880-81.....	1,403	379	1,642
“ “ “ 1879-80.....	869	205	731

The yearly average for the four years was 1,295 accidents, 355 killed and 1,379 injured.

The number of accidents in May was exceeded in eight months of the year. The number of killed was also exceeded in eight months, while all the other months of the year, with one exception, show a larger number of injured.

The averages per day were, for the month, 3.87 accidents, 0.90 killed and 2.48 injured; for the year, 4.34 accidents, 1.17 killed and 4.95 injured.

The average casualties per accident for the month were 0.233 killed and 0.642 injured; for the year they were 0.270 killed and 1.127 injured.

The averages per month for the year were 132 accidents, 38 killed and 149 injured. The month was below the average in all respects.

Crop Prospects.

There is observable the usual disposition to represent crop prospects according to what is desired rather than in strict accordance with known facts. The prevailing desire is to have a good crop, there being apparently a very slight "bear" interest in the stock market, and not very prominent "bull" interests in the grain market since the recent break in prices at Chicago. Newspapers which usually try to speak the truth have had much to say of the "recent great improvement of the crop prospects," which is mostly in their own imaginations. It is true that June was generally favorable for wheat and other small grains. But for winter wheat, which covers more than 27,000,000 of the total 37,087,000 of area sown to wheat, good weather in June cannot do a great deal. It is grown in southernly regions, in most of which harvest begins before the end of June. In California, where there is a very large area sown (more than 3,000,000 acres), the crop is mostly harvested in June, and a good deal is cut in Kansas in that month—a little also in the Ohio Valley, even north of the river. Only in Michigan, of winter-wheat growing states,

is there time for a considerable improvement of the crop after June 1. The prospect then was that, without change in condition, there would be about 290,000,000 bushels of winter wheat, against 387,000,000 last year. There appears to have been some improvement since, we say, though we have not sufficient data to measure it by; but an improvement of 3 per cent. would be a very large one to make in June, and this would amount to less than 9,000,000, and leave the total winter wheat production 88,000,000 bushels less than last year. The most of the crop is yet to be harvested, and so has to meet the contingency of bad harvest weather. Last year there were considerable losses from such weather only in Michigan and northern Ohio. It is, of course, possible that the Department of Agriculture, on whose estimates of acreage and condition June 1 the above figures are based, has made a mistake. Its final estimate will not be made until after harvest. But there are no other estimates which have a fraction of its probability of accuracy. Spring wheat and other small grains seem to have done well everywhere, and June is an important month for them, as July also will be. The lateness of the season increased the chances of the spring wheat suffering from drouth before getting a good start; but there has been no drouth, and too much cold and wet weather, rather than the reverse, has prevailed. But the condition of spring wheat was good June 1—reported at 98 by the Department of Agriculture, 100 being that promising a good, full crop. But crops in individual states have stood above 110 at harvest time, and it is not impossible that this condition may be reached by the spring wheat of the whole country, as it is nearly all raised in a limited district. Moreover, the increase in acreage of spring wheat this year has been entirely in those states which have more than the average yield per acre, a fact not sufficiently considered when we reviewed the crop prospects June 15. Therefore we should say that with everything favorable in all the spring wheat states hereafter, it is possible for the crop to reach 140 millions of bushels, against a prospect for 123 millions June 1, and an actual yield of 117 millions last year. Not that the prospect now is for 140 millions, but that with everything favorable hereafter it may reach that. Now, it must be for something more than the 123 millions for which there was a prospect June 1.

Generally it appears, then, that if the estimates of acreage by the Department of Agriculture are correct, and they probably are very nearly so, the largest crop of wheat that can be hoped for will be not more than 440 millions of bushels, against 504 last year, 380 in 1881, 498 in 1880 and 459 in 1879. But the prospect for the country west of Lake Michigan is for the largest crop ever harvested, nevertheless, and there the other small grains are doing extremely well.

Corn is, however, a more important crop than wheat, and corn has had a bad season until within a week or two in most of the country which grows corn and hogs for export. The cool, wet weather which caused the small grains to get well rooted and gave them a foundation for the best growth afterward prevented the corn from growing at all. Hot, tolerably moist weather, but dry enough to permit cultivation, is what corn wants. It was with the utmost difficulty that it could be started. Most farmers planted their fields twice and many three times. They finally succeeded, it seems, in getting the corn to come up. There are plants enough, according to the prevailing (but very incomplete) reports, but it has grown very little since. Still in most of the corn belt with hot days and nights through July and neither drouth nor flood, an enormous growth will be made by August, and a full crop is still possible, especially if the frost holds off in September. Further north, as in Minnesota and Wisconsin, and possibly in the northern third of Iowa, perhaps it is too late for a full crop. There, however, except in Iowa, corn is a crop of subordinate, though growing, importance. A most intelligent and careful railroad officer, who recently passed over most of the settled country west of Lake Michigan and north of the latitude of Chicago, gives it as his opinion that "with favorable weather hereafter, this country may still produce a fair crop of corn." The same officer, by the way, reports that the condition of all small grains throughout this country was perhaps never better.

But to get a full crop of corn now north of the Ohio we must have very favorable weather. The actual present condition—the one established fact in the premises—is positively bad. It is very much as it was last year, only, as nearly as we can learn, not quite so bad. Then it was too much cold and wet that kept back the corn, and doubtless made the crop 100 million bushels less than it would otherwise have been. But there has been some good growing weather this year, and there was none last year certainly until after the first week of July. On the 4th of July and for two or three days about that time fires were necessary for comfort in the evening in the latitude of Chicago. We think it has not been so bad this year, though there has been more rain perhaps. The acreage is considerably greater than last year. A good yield would be a great advantage to a very large number of railroads, to the packing interest and to the general condition of business in the country. A decidedly bad crop, which of course is possible, though it is much rarer than a bad wheat or cotton crop, would be a serious misfortune, and for one great railroad company might be the last straw that would break its already overloaded back.

The grain crops in the South seem generally to promise well. Not as much wheat and oats were sown as last year, and perhaps not so much corn planted east of the Mississippi. But last year the South had an abnormally large acreage of grain—was forced to, because of the great failure of all crops in 1881 and the consequent lack of means and credit to buy

grain from the North. In spite of all that has been said, grain is not a profitable crop in most parts of the South. An acre of cotton usually brings in money enough to pay for more corn than can be raised on two acres. Under these circumstances, planters will not put much corn on good cotton land. They grow good crops of cotton on land that produces but 10 bushels of corn an acre, and buy corn from Northwestern farmers who get a yield of 40 bushels an acre. In the Gulf states the corn ripens before the end of August, and it is pretty well out of the way of all dangers by this time. Such reports as have been made are favorable, and though this section does not produce for export, a good yield there lessens the demand on the Northwestern states, and tells on the country just as much as if it were in Illinois, though not on the railroads.

The great crop of the South, however, is cotton. We have heretofore repeated the report of the Department of Agriculture that the area under cultivation is this year three per cent. more than last, and that the condition June 1 was the lowest for several years, though but little lower than last year, when notwithstanding the yield was the largest ever known. Since that time the *Commercial and Financial Chronicle* has published its report of acreage and condition. This journal collects original statistics concerning cotton, and has done so with a thoroughness and carefulness which has made it an authority on the subject the world over. Its report differs materially from that of the Department of Agriculture, but it gives sound reasons for its differences, and supports the accuracy of its report last year, which also differed greatly from that of the Department of Agriculture, by the incontestable figures of the out-turn of the crop.

The *Chronicle* then reports the cotton acreage as follows, in thousands of acres, for the last seven years:

Year.	1877.	1878.	1879.	1880.	1881.	1882.	1883.
	12,231	13,202	14,442	16,123	16,851	16,590	17,449

This is an increase of 5.2 per cent. over last year, instead of 3 per cent., as the Department of Agriculture gives it. The rate of increase for the whole period (42½ per cent. since 1877, an average increase of just about 6 per cent. yearly) seems enormous for a community in which the increase of agricultural population is almost solely the natural one—in which there is no great increment from immigration as there is in the North. This population can hardly have grown more than 2½ per cent. yearly, and that is a tremendous rate. It follows that more acres of cotton per hand have been cultivated, and this at a time when, it is believed, there has been more thorough cultivation than previously, and much more employment for field hands in other industries, especially railroad building. But it must be remembered that the labor is only one of the elements limiting the area cultivated. Until quite recently lack of capital was the controlling limitation. Most planters could have cultivated more if they could provide the necessary tools and teams and supplies. They did not as a class become fairly independent and prosperous after the war until about 1878, or perhaps later. There were about 4,727,000 colored people in the cotton states in 1880. They tend more and more to leave the plantations and go to the towns, we are told. They make certainly more than three-fourths of the cotton—possibly nine-tenths. Increasing at the rapid rate of 2½ per cent. yearly there are 5,113,000 now. This would give 314 acres of cotton to every 100 negroes in 1879, 341 in 1880, and 341 in 1883. The 1879 figures for acreage are from the census. The increase in acres per hand was thus all made in 1880.

A large increase of cotton acreage this year was to be expected because of the reduction in the acreage of grain.

The changes in acreage in the different states the *Chronicle* reports as follows:

	1883.	1882.	Increase.	P. c.
North Carolina.....	1,072,000	1,041,000	+ 31,000	3
South Carolina.....	1,654,000	1,606,000	+ 48,000	3
Georgia.....	2,977,000	2,835,000	+ 142,000	5
Florida.....	270,000	265,000	+ 5,000	2
South Atlantic states.....	5,973,000	5,747,000	+ 226,000	4
Alabama.....	2,813,000	2,679,000	+ 134,000	5
Mississippi.....	2,440,000	2,346,000	+ 94,000	4
Tennessee.....	869,000	869,000	+ 17,000	2
Ky., etc.....	111,000	108,000	+ 3,000	3
East Gulf and Interior.....	6,250,000	6,002,000	+ 248,000	4½
Louisiana.....	940,000	904,000	+ 36,000	4
Texas.....	3,102,000	2,820,000	+ 282,000	10
Arkansas.....	1,184,000	1,117,000	+ 67,000	6
Southwest.....	5,220,900	4,841,000	+ 385,000	8
Total.....	17,440,000	16,590,000	+ 850,000	5.2

The grouping of states is our own. It will be seen that the four South Atlantic states, which had 34.6 per cent. of the whole acreage last year, made but 26.3 per cent. of the increase; while the Southwestern states, which last year had 29.2 per cent. of the total acreage, have made 44.7 per cent. of the increase. But the increase is large in the tier of states from Georgia to Texas inclusive, and in Arkansas, Texas, which also made a great gain last year (when there was a decrease in every other state), making a great stride forward and for the first time having a larger acreage than any other state. Georgia has always led heretofore, but though it makes a great gain this year, Texas has 125,000 acres more, and it will probably never lose the lead it has gained, but increase it instead.

As to condition, the *Chronicle* reports that the crop was very backward June 1, even more so than last year, but it had been well cultivated. Wet weather in the first half of June interrupted cultivation considerably. Fertilizers had been used to a greater extent than ever before; and the *Chronicle* does not hesitate to call the condition when its report was made (June 22) good, regarding the backward-

ness of the crop as of very little importance, as indeed last year's experience would indicate.

Wet weather after the time of this report would prevent cultivation, and thus cause serious damage at this stage of the growth of the plant. Generally the weather was favorable in the last week of June. July will nearly make the crop, so far as growth is concerned, but the weather after August, when picking is going on, makes a great difference in the yield. It would appear, however, that the crop has made a good start, and with the much larger acreage there may be a larger production than last year even. With good grain crops, this means prosperity to the South and another year of good traffic for the Southern railroads. The part of the country which is most likely to have inferior crops is that which is usually the most productive—east of Pennsylvania to Kansas, south of Michigan, Wisconsin and Minnesota, and north of the Ohio, where winter wheat will certainly be a light crop, (and the prospect for corn is still dubious. Elsewhere, there seems to be a good prospect ahead. There the corn crop may yet turn out well, and if it does, the failure of winter wheat will not be very important. It should be remembered, however, that spring wheat and cotton, as well as corn in the North, have yet to meet many dangers. It is not safe to count upon a good crop of any of them yet. At this moment, corn is in the most precarious condition—that is, it must have good growing weather directly, or a light crop is inevitable. The chances are, however, ten to one that it will have good growing weather now. It is wet enough; what it wants is hot weather, and hot weather in July is probably more to be relied upon than any kind of weather in any other month. It may be too wet, however, and that would be bad for corn and worse for small grain.

May Earnings and Expenses of the Pennsylvania Railroad.

The report of the lines worked by the company east of Pittsburgh and Erie for the month of May shows an increase over last year of \$194,129 (4½ per cent.) in gross earnings, an increase of \$352,244 (15 per cent.) in working expenses, and consequently a decrease of \$158,115 (9 per cent.) in net earnings. The increase in working expenses seem unduly large, but an examination of last year's monthly returns shows that the expenses in May were much less than in any other month of the year after February, and this year the May expenses are but \$101,600 more than in April, and less than in March. The gross earnings were \$241,000 more than in April, and more than in any other month since November, but this is not unusual. The first four months of the year are usually the least productive, unless a railroad war brings down the receipts later in the year, as in 1881. The net earnings were larger in May this than in any previous month since October.

For 11 successive years the gross and net earnings and working expenses in May of these lines east of Erie and Pittsburgh have been:

Year.	Gross earnings.	Expenses.	Net earnings.
1873.....	\$3,706,803	\$2,759,028	\$ 947,775
1874.....	3,261,456	2,102,099	1,159,357
1875.....	2,633,322	1,790,620	842,702
1876.....	2,982,245	2,096,565	885,680
1877.....	2,583,447	1,593,943	989,504
1878.....	2,503,441	1,529,911	973,530
1879.....	2,708,096	1,674,093	1,034,003
1880.....	3,417,915	1,941,063	1,476,852
1881.....	3,856,897	2,168,287	1,688,610
1882.....	4,108,877	2,342,088	1,766,789
1883.....	4,303,006	2,694,332	1,608,674

Thus the gross earnings were larger this year than ever before—\$446,000 (11½ per cent.) more than in 1881, \$885,000 (23 per cent.) more than in 1880, and \$1,400,000 (51½ per cent.) more than in 1879. But the increase in working expenses has been large also, amounting to \$1,020,000 (60 per cent.) since 1879, and to \$753,000 (38 per cent.) since 1880. This leaves the net earnings this year \$80,000 less than in 1881, when the gross earnings were \$446,000 greater, as well as \$158,000 less than last year: and of the gain of \$885,000 in gross earnings over 1880, but \$132,000 is net, and of the \$1,594,000 over 1879, \$574,500 is net.

On the lines west of Pittsburgh and Erie in May the net earnings were \$34,575 less than the liabilities, against a surplus of \$149,710 in April, and one of \$225,951 in March. This deficit is equivalent to but 1.4 per cent. of the average monthly earnings of this vast system of roads, which has netted the following surpluses and deficits in the last five

Year.	1879.	1880.	1881.	1882.	1883.
Deficit.	\$219,733	\$11,201	\$144,458	\$75,586	\$34,575

A deficit has been more common than a surplus in May. For the five months ending with May the returns of the lines east of Pittsburgh and Erie for this year and last compare as follows:

	1883.	1882.	Increase	P. c.
Gross earnings.....	\$20,195,713	\$18,557,096	\$1,638,617	8.8
Expenses.....	12,856,225	11,901,503	954,722	8.0

Net earnings... \$7,339,488 \$6,655,593 \$683,895 10.3

Thus, taking the whole five months, the expenses have not increased at so great a rate as the expenses, and there is the very large increase of 10½ per cent. in net earnings.

At the same time the system of roads west of Pittsburgh and Erie have netted a surplus of \$351,291 for the five months, against a deficit of \$68,315 last year, making a gain of \$419,606, which, added to the increase in net earnings, gives a profit \$1,103,501 more than last year, which is equal to about 1½ per cent. on the stock as recently increased, and to about 16½ per cent. on the addition to the stock made within the last year. There will be, however, some addition to the interest charges this year, and perhaps some changes (which may be decreases) in rentals.

For the five months ending with May the earnings and expenses of the lines east of Pittsburgh and Erie have been, for seven successive years:

Pennsylvania Railroad Earnings and Expenses, Five Months to May 31.

Year.	Gross earnings.	Expenses.	Net earnings.
1877.....	\$11,890,220	\$7,994,149	\$3,896,071
1878.....	12,071,738	7,630,173	4,441,565
1879.....	13,023,249	7,778,588	5,244,661
1880.....	16,212,596	9,130,634	7,081,962
1881.....	17,746,400	10,237,801	7,508,599
1882.....	18,557,096	11,901,503	6,655,593
1883.....	20,195,713	12,856,225	7,339,488

In gross earnings the gain is 13½ per cent. since 1881, 24½ since 1880 and 55 per cent. (\$7,172,000) since 1879. Against this we have an increase in working expenses of 25½ per cent. since 1881, 40½ per cent. since 1880 and 65½ per cent. (\$5,078,000) since 1879. The net earnings, however, are larger this year than in any other except 1881 and but 2 per cent. less than then, though of the gain of \$3,983,000 since 1880 only \$258,000 is net.

The lines west of Pittsburgh and Erie have netted in these five months a surplus or deficit as follows since 1878:

Year.	1879.	1880.	1881.	1882.	1883.
Deficit.	\$166,950	\$1,328,378	\$1,553,708	\$68,315	\$351,291

These lines, therefore, made much greater profits for the lessee in 1880 and in 1881 than this year, when, however, the gain was \$419,606 over 1882, and \$518,241 over 1879, when rates on east-bound through freight during the first seven months of the year were badly cut.

Adding the profits of the Western lines to the net earnings of the Eastern system for these five years, we have:

1879.	1880.	1881.	1882.	1883.
\$5,077,711	\$8,410,340	\$9,062,182	\$6,587,278	\$7,690,779

Thus, though the profits here shown (the company has a large income from stocks and bonds owned not shown here) are \$1,100,000 larger this year than last, they are \$1,371,000 less than in 1881 and \$720,000 less than in 1880—the former sum equal to about 1½ per cent. on the company's present share capital.

After all that has been heard of the dullness in the iron trade, we are somewhat surprised to see this company's earnings hold up so well. Evidently the condition of things has not yet been such as to compel any considerable reduction in the rates on the raw materials and products of the iron works, or any great reduction in the amount carried.

The Late Charles F. Jauriet.

C. F. Jauriet, a notice of whose death was published two weeks ago, was born November, 1818, at St. Charles, in Canada, and was of French descent. At an early age he emigrated to Detroit, where he learned the trade of a machinist. In 1843 he married Miss Mary Ann Robinson, of Detroit, who died in 1852 and left two children.

Mr. Jauriet was for a time employed on the Michigan Central Railroad, and had charge of the shops at Michigan City. He went to the Chicago, Burlington & Quincy Railroad in 1854 or 1855, and was first placed in charge of the Galesburg shops.

In 1855 he married Miss Eliza Aikens, of Michigan, who survives him. From Galesburg he went to Aurora, Ill., and took charge of the shops at that place and of the motive power on the whole line of the Chicago, Burlington & Quincy Railroad. He remained there until the spring of 1872, when he resigned. During the same year he was appointed Master Mechanic of the United States Rolling Stock Company, which position he held until his death.

Mr. Jauriet was a man of remarkable ingenuity and mechanical ability, and while occupying the position of Superintendent of Motive Power at Aurora he manifested his ingenuity in many ways in the construction of the machinery of the line. He then perfected his fire-box for burning bituminous coal, which was extensively used on that line. It consisted of an inclined "water-table" attached to the back tube-plate below the tubes and extended backward and upward into the fire-box. Although it was patented by him, it was always disputed whether he was the first inventor. The patent covered only some improvements in its construction.

He was one of the locomotive superintendents who first realized the importance of having abundant boiler capacity in his locomotives, and one of his favorite maxims was that "you need plenty of room in the boiler, so that you can bottle up the power."

He had good taste in designing machinery, was a good workman and judge of work. He had a remarkable control over men, and commanded their respect and obedience. He aided them in many ways with advice and counsel, and was active in charitable and religious enterprises. His funeral was attended by many of his associates and those who were formerly under his authority. He leaves four children and many old friends and acquaintances, to whom his death will be an irreparable loss.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Kansas City, Fort Scott & Gulf.—On this company's *Kansas City, Springfield & Memphis* line track is laid from Augusta, Mo., southeast 11 miles; also from Jonesboro, Ark., southeast 43 miles.

Milford, Franklin & Providence.—Completed from Nason Crossing, Mass., west to Bellingham, 5 miles.

Northern Pacific.—The *Fargo & Southwestern Branch* is extended from Lamoure, Dak., westward 11 miles.

St. Louis, Fort Scott & Wichita.—Extended from Towanda, Kan., southwest to Wichita, 18 miles.

St. Paul, Minneapolis & Manitoba.—A branch is com-

pleted from Crookston, Minn., east by north to St. Hilaire 22 miles.

Terre Haute & Logansport.—Extended from Logansport, Ind., east to Kewana, 21 miles.

Texas & St. Louis.—Extended southwest to Rob Roy, Ark., 12 miles. Gauge, 3 ft.

This is a total of 143 miles of new railroad, making 2,109 miles thus far this year, against 4,415 miles reported at the corresponding time in 1882, 2,281 miles in 1881, 2,190 miles in 1880, 1,008 miles in 1879, 691 miles in 1878, 689 miles in 1877, 740 miles in 1876, 426 miles in 1875, 690 miles in 1874, and 1,518 miles in 1873.

A NEW CHICAGO-DETROIT PASSENGER LINE is to be opened next Monday, intended to give the Great Western a Chicago connection in place of the Michigan Central, which it has just lost. The line is one which was spoken of some time ago, consisting of the Chicago Division of the Baltimore & Ohio from Chicago to Auburn Junction, 146 miles, and the Detroit & Indianapolis Division of the Wabash thence to Detroit, 133 miles. This makes a route 279 miles long, against 284 by the Michigan Central old line and 272 by its Air Line. It is difficult to see why this should not afford just as good accommodations as any other road, but it can hardly be expected to make up to the Great Western anything like what the Michigan Central brought it and now gives to the Canada Southern, its own line. Indeed, if a short line were all that is needed, the Grand Trunk did not need to hunt one up. Its own road from Chicago to Buffalo is very direct, and if it is desired that trains should go by Niagara Falls, they can be made to do so in connection with the Great Western, and it would be much better for it that the travel should go by this route than by the line via Auburn to Detroit, no share of whose earnings does it get. But it is plain that the travel that formerly went by the way of the Michigan Central cannot be made to go by the Chicago & Grand Trunk—that is, no large part of it. The same will doubtless be true of the new line made up of the Baltimore & Ohio and the Wabash. It will have to develop its through travel slowly and laboriously, like any other new road—as the Chicago & Grand Trunk has been doing, as the Nickel Plate has hardly begun to do, and as the Chicago & Atlantic will have to do; and with this disadvantage, that there is an Eastern trunk line which will use all its influence in its from, as the Erie may do with the Chicago & Atlantic. The new Lackawanna road to Buffalo may, it is true, make this its chief passenger connection, but it too has its passenger business yet to build up. The fact is, the Great Western was exceptionally dependent on other roads for through traffic, freight as well as passenger, and passenger especially. Its east-bound passengers were brought to it by the Michigan Central, its west-bound by the New York Central and the Erie. It controlled very little itself. Probably many a man has traveled between New York and Chicago who did not know whether he passed over the Great Western or the Canada Southern between Detroit and Buffalo. The new route, of course, will be able to get a share of the travel on tickets between Detroit and Chicago only, which the Chicago & Grand Trunk could not touch; but this is not an important amount. Considering how much the Chicago travel is divided now, it is questionable whether an additional route will yield much profit. It must be remembered, however, that no new road will have to be built, and probably very little additional train service will be required. We should suppose, however, that the Wabash and the Baltimore & Ohio have much more to gain by it than the Grand Trunk. It is not impossible that it may lose by it; that is, that it will take more from its line of 531 miles from Chicago to Buffalo than it will give to its line of 229 miles from Detroit to Buffalo or Suspension Bridge.

A FIFTH-CLASS OF WEST-BOUND FREIGHT was established by the trunk lines two weeks ago, including sugar, syrups, molasses, soda-ash, salt, iron and some other heavy articles. It seems to have been generally assumed that this change was made because of the competition of the new Lackawanna line; but this would be an extremely inefficient way of meeting such competition, as it applies only to the freight which pays the lowest rates, by the loss of which the least profits are lost. It is not to be supposed that when the Lackawanna is engaged in building up a through freight business it confines its efforts to the goods which pay 35 cents per 100 lbs., and neglects those which pay 75. On the contrary, it could much better afford to make a cut of 10 cents per 100 lbs. on the first-class than one of 5 cents on the fourth-class rate. It is doubtless easier to divert low-class than high-class freight from its ordinary channels, and the reduced rates for these few but important articles which have just been put into a fifth class, with a rate of 25 cents per 100 lbs., have doubtless been caused by such a diversion. Only a small part of it has been to the Lackawanna road, however, which claims that it is maintaining the regular rates, but some to the New London-Montreal route, some to the Chesapeake & Ohio, which are authorized to charge less than trunk line rates, and a great deal more to the Erie Canal. In fact, it is usual to have a fifth class to meet canal competition for a few articles like sugar, and unusual not to have one. Indeed, much of the time there has been not only a fifth but a sixth class. The tariff of Feb. 14, 1878, which was in force until the railroad war broke out, provided a rate of 25 cents for sugar and molasses, which was in force in winter as well as summer, and in September of 1879, when imports of iron began to be very heavy, a separate class, at 25 cents per 100, was made for scrap iron, spiegel-eisen, pig iron, blooms, salt and cement, and a special rate

of 30 cents was made for rails. The tariff of July 1, 1882, succeeding the low contract rates of the first half of the year, provided a special class at 25 cents, including sugar and molasses, so that the tariff of Nov. 1 last, with 35 cents for the fourth class the lowest rate, was decidedly an innovation. It worked well enough as long as the canal was closed; that it has to be reduced when it is open is only what occurs with the east-bound grain and provision rates, and is always expected. These freights, or most of them, can well afford to pay the 35-cent rate; but as they can get transportation for less, which will answer for a large part of the shipments, the railroads must meet the competition or give up a large part of the freight.

CHICAGO THROUGH RAIL SHIPMENTS EASTWARD for the last nine days of June are not yet reported; but the incomplete reports made at Chicago for the eastward shipments, through and local, of flour, grain and provisions for the week ending June 30, is at hand, and is quite significant. It gives these shipments as 32,244 tons, against 16,432 tons in the corresponding week of last year and 27,215 in the previous week of this year. Though this shows a large increase last week, the shipments cannot be called large. The totals (including some which would not go into this report), were 67,953 tons in 1881 and 46,995 in 1880. The increase over the previous week is chiefly in provisions, which are coming forward freely since the collapse of the lard corner, and make up nearly one-half of the total shipments, which probably never occurred in summer before.

The most notable feature of the week's shipments, however, is not their amount, but their distribution by the several routes. The new Chicago & Atlantic road is shown to have carried more than other road save one, and that one is not the Fort Wayne or the Chicago & Grand Trunk, which have led recently, but the Chicago, St. Louis & Pittsburgh, which has been allotted heretofore 10 per cent. of the whole. The Fort Wayne, which for a long time has carried much more than any other road, stands fifth, carrying 9.6 per cent. of the whole, which indicates that the Erie has given the freight which formerly it sent to the Fort Wayne to the Chicago & Atlantic, and that the Chicago, St. Louis & Pittsburgh is making good its declaration that it should use all the advantages it possesses, regardless of its effect on the Fort Wayne. The report, as we have said, is imperfect, and the pool report may differ from it considerably, but the changes are probably correctly indicated by it. The two roads out of the pool carried 7,398 tons, or nearly one-fourth of the whole. It is the balance only that the six pool lines divide. It is somewhat remarkable that in less than a month the Chicago & Atlantic should secure six times as much freight as the Nickel Plate, which has been open more than six months. Nearly three-fourths of its shipments were provisions, of which it carried more than any other road.

THE POSITION OF THE DELAWARE, LACKAWANNA & WESTERN, which is trying to build up a through traffic on its new New York-Buffalo line, outside of the pool, seems to have alarmed many speculators. The company, however, makes no secret of its position. It declares that it intends eventually to unite with the other trunk lines, and accept a fixed share of the through traffic from New York; but it first desires to ascertain how much traffic it will be able to command, which it thinks it cannot do without trying. It is pledged to maintain rates, and it reports its traffic to Mr. Fink's office, receiving in return reports of the shipments of the other trunk lines. It is perhaps not generally believed that it does strictly maintain rates, though there is now not much complaint against it. Some time ago there was very general complaint that it was making reductions to an important extent, and diverting a considerable business from some of the older lines, chiefly from the Erie, we believe. The other trunk lines urge that it should have accepted an award of a share of the traffic from the beginning; but it is very doubtful whether it would ever have been satisfied with any percentage it would have received if it had not first tested its ability to secure traffic by competing for it. If while making some concession to shippers it secures a given amount of traffic, it will be satisfactory evidence that it cannot command any more if it maintains rates. It is securing a share of the immigrants from Castle Garden, perhaps 15 per cent. of the whole number, but apparently the immigrants pay full rates, and the irregularity (which is no trifling one) is in paying commissions to outside agents. There is good reason to believe that the Lackawanna is at least as anxious as any other company not to do anything which will result in a general reduction of rates. It pays a high rental for the 200 miles of its Buffalo extension, and it is very anxious to get some profit out of it.

RECEIVING EMPLOYEES TO NEGOTIATE CONCERNING WAGES is regarded by some employers in this country as in some way fatal to "discipline," or derogatory to the dignity of an employer. In a note on the settlement of some difficulty between an English railroad company and its enginemen and firemen, which we copy from *The Engineer*, it is said that Mr. Stroudley, the Locomotive Superintendent, "received a deputation at Brighton, consisting of 20 drivers and firemen from all parts of the line," in negotiation with whom he settled upon the future basis of wages, etc., for these classes of employees.

His action in this respect is in marked contrast with that of some of the officers and managers of railroads and manufacturing in this country, who for some absurd reasons refuse to receive committees or deputations from their employees.

It is certain that the right of being heard in this way is one that will be insisted upon by the men, and will ultimately be established here as it has been in Great Britain.

EDITORIAL CORRESPONDENCE.

The Chicago Exposition of Railway Appliances.

A plan of the exhibit of the Union Switch & Signal Company, of Pittsburgh, Pa., is published in this number of the *Railroad Gazette*. That company exhibited a full-size signal track crossing and turn-out, with pneumatic apparatus for operating switches and signals; a 12-lever machine, a Saxby & Farmer patent, for operating switches and signals; a system of hydraulic interlocking for operating a double-track junction; a set of Saxby & Farmer's interlocking apparatus, with 12 levers and an electric lock attached; a model of a track showing a draw-bridge with a 4-lever machine for protecting the draw with proper signals, and derailling points on one side of the draw; a Sykes apparatus for four stations; also frogs and switches and a railroad crossing of its manufacture, of which they make a specialty; also a double semaphore signal on one post and a depot signal. As we expect to give detailed descriptions of its appliances in the future, this brief notice is all that will be given now.

The Westinghouse Automatic Brake Company had on exhibition an apparatus for its automatic freight train brake, representing a train of 30 cars; also an apparatus for a single car, which was detached, but arranged so that it could be operated by air pressure, the same as on the car itself. It also showed a specimen of a pump, and an engineer's brake valve, with a section planed away, so that the internal construction could be plainly seen.

The United States Metallic Packing Company exhibited specimens of its packing adapted for various purposes, such as piston-rods, pump-plungers, valve-stems, etc.; also the patterns for packing for the pump-plungers of the Lawrence Water-Works. These plungers are 18½ in. in diameter, showing the applicability of this kind of packing for rods or plungers of large diameter.

The Brooks Locomotive Works, of Dunkirk, N. Y., exhibited seven locomotives; one a standard 10-wheel engine, with tender, 19 × 24 in. cylinder; driving-wheels, 55½ in. in diameter; weight of engine in working order, 94,500 lbs.; weight on driving-wheels, 73,100; also one standard gauge Mogul locomotive, with tender, 18 × 24 in. cylinders; driving-wheels, 55½ in. in diameter; weight of engine in working order, 86,000 lbs.; weight on driving-wheels, 72,500 lbs.

One 6-wheel coupled switching locomotive and tender, 17 × 24 in. cylinders; driving-wheels, 48 in. in diameter; weight in working order, 66,000 lbs. One 3-ft. gauge Mogul locomotive and tender, with 15 × 18 in. cylinders; driving-wheels, 37 in. in diameter; weight in working order, 47,500 lbs.; weight on driving-wheels, 42,000 lbs. One narrow-gauge passenger locomotive and tender, 14 × 18 in. cylinder; driving-wheels, 48 in. in diameter; weight in working order, 46,000 lbs.; weight on driving-wheels, 30,500 lbs. This engine is fitted with Westinghouse air-brake apparatus, and also has the air-brake applied to the driving-wheels.

They also exhibit one standard-gauge passenger locomotive and tender, 17 × 24 in. cylinders; driving-wheels, 67 in. in diameter; weight in working order, 74,000 lbs.; weight on driving-wheels, 48,000 lbs. This engine also is equipped with a Westinghouse air-brake pump.

The seventh exhibit is a passenger locomotive with extended smoke-box and straight chimney; cylinders, 18 × 24 in.; driving-wheels, 67 in. in diameter; weight in working order, 84,500 lbs.; weight on driving-wheels, 54,000 lbs. This engine is equipped with a Westinghouse air-brake pump, and also with the driving-wheel brake. It has Allen paper wheels under the truck and cast-iron wheels under the tender.

All these engines have wagon-top boilers and a single dome over the fire-box. The dome and sand-box are finished with heavy cast-iron moldings. The engines are painted black, with neat and simple striping in gold. The passenger engines are fitted with brass moldings round the steam-chest and brass flag-staffs. The tenders are also painted black, with simple striping.

Messrs. H. K. Porter & Co., of Pittsburgh, Pa., exhibited a standard tank locomotive for hauling logs. It has two pairs of driving-wheels, all located between the fire-box and smoke-box, and with a pony truck behind, which supports a bin for carrying fuel, the water-tank being placed on top of the boiler.

The Baldwin Locomotive Works, of Philadelphia, exhibited four locomotives. One was a consolidation locomotive, 20 × 24 in. cylinder; 49 in. driving-wheels; boiler, 60 in. in diameter; weight, independent of tank, 125,000 lbs. in working order.

One was a 3-ft. gauge consolidation locomotive, 15 × 18 in. cylinders and 36 in. driving-wheels; boiler 48 in. in diameter.

A third was a passenger engine, of 3 ft. gauge, cylinder, 13 × 6 in.; driving-wheels, 41 in. in diameter; weight about 16 tons.

The fourth was a standard-gauge passenger locomotive, for the Northern Pacific Railroad, 17 × 24 in. cylinders; driving-wheels 63 in. in diameter. This engine is equipped with the Westinghouse air brake-pump and driving-wheel brake, with automatic brake attachment for operating driving-wheels.

The narrow-gauge consolidation engine has the extended smoke-box. The engines are all painted black, neatly and simply striped, and the domes and sand-boxes are all finished without moldings, a departure which has recently

engines, with extended smoke-box and straight chimney, and was altogether the roughest and worst piece of workmanship in the whole exhibition. The engine and the workmanship are not creditable to the state of the art of railroading on that line.

Among the relics was the boiler of the old Stour bridge Lion, which was the first locomotive that ever ran in this country, and which was built in England under the direction of Horatio Allen, Esq., in 1828. The shell is the only part of the original boiler which is left, and the only part of the engine which was exhibited. This boiler is 10 ft. 2½ in. long and 4 ft. 3 in. in diameter, measured over all.

The remains of the "Puffing Billy," which were on exhibition, consist of a boiler and a tender. The steam cylinders are vertical and placed on top of the boiler. The running gear and other mechanism are no longer extant. It is said to have been built in 1813. This engine has cast-iron spoke wheels, and the axle at the wheel-seat is square. The hub is cast in four parts, with a wrought-iron ring shrunk on inside and outside.

Another of the old engines on exhibition was the "Locomotion," built by Stephenson in 1825.

The next was the John Bull, built in England in 1831 and sent to this country for the Camden and Amboy Railroad.

The Baltimore & Ohio Railroad exhibited the "Arabian," built in 1834. A full description of this engine, written by the late Benj. H. Latrobe, C. E., was published in the *Railroad Gazette* of March 8, 1873. Altogether it was the most remarkable engine exhibited. It was built nearly 50 years ago, and four like it are still in regular service on the Baltimore & Ohio Railroad. Originally they had separate tenders, but the tender has been detached from the "Arabian," and a water tank placed on the engine frame. The cylinders are vertical and the piston rods are coupled to a grass-hopper walking-beam. The connecting rod is connected to the outer end of this, and is coupled to a crank shaft somewhat above the driving-wheels, which is geared into another shaft with cranks on the outside, which are in turn coupled to the outside cranks on the driving-wheel shafts.

Next to the "Arabian" was the "Pioneer," said to have been the first locomotive in the Northwest. It is owned by the Chicago & Northwestern, and was built by Baldwin in 1836. The "Pioneer" is a six-wheel locomotive with a single pair of driving-wheels behind the fire-box, and a four-wheel truck underneath the cylinders. The cylinders are inclined, and the pistons are connected with a crank on the inside of the wheels. The axle bearings of the driving-axles are on the outside, and the eccentrics, which work a hook motion, are outside of the bearings. The valve gearing is in the old-fashioned V-hook form. The engine bore the following inscription:

"This engine was built by M. W. Baldwin, Philadelphia, June, 1836, for the Utica & Schenectady Railroad; afterward bought by the Galea & Chicago Union Railroad. It is the first engine owned by that company, and probably the first engine used by any Western railroad. The engine was in service 35 years."

The size of cylinders is 11 x 18. The driving-wheels are about 4½ ft. in diameter. The pump is on the inside of the piston-rod, and forms a guide for the cross-head. The horizontal section of the fire-box would be of the form of the letter D, and it has a large hemispherical dome over the top. The frames are outside of the driving-wheels, and are bolted fast to the cylinders, and also to braces connected to the boiler, about half way between the cylinders and the driving-wheels.

Next was the "Samson," built in 1838, which was sent to the Exposition from Nova Scotia. It went out of service in August, 1882.

A model sent by the Northeastern Railway, of England, of the old No. 1 engine "Locomotion," was also exhibited, and looked more like the original than the original itself.

The North London Railway of England sent a model of a passenger locomotive and railway carriage. The locomotive is of the 4-coupled type, with a single pair of leading wheels in front. The carriage is of the usual English pattern.

Another model of an English passenger locomotive with a single pair of driving-wheels was exhibited. It has a single pair of leading wheels in front of the cylinders, and a single pair of trailing wheels behind the fire-box. It has the screw reversing gear, and is otherwise of the common English pattern. A model of a first-class passenger carriage was also exhibited, with the sheathing on one side removed so as to show the system of framing adopted in that country. One compartment is upholstered, and shows the manner in which this sort of work is done in that country.

A model of a locomotive with some kind of radial axles was also exhibited, but no description nor explanation was provided, so that we are unable to say what it was or where it came from.

With the engine "Locomotion" a coal wagon was also exhibited, which had the same peculiarity as that noted on the "Puffing Billy," i. e., the wheel-seats of the axles are square.

A large number of photographs and drawings of English locomotives, rolling stock and railroad structures were also exhibited, as well as a collection of old drawings illustrating the early history of locomotives in this country, some of which appeared to be authentic, while others bore evident traces of a recent origin.

The Wharton Railroad Switch Company exhibited one of its well-known switches, with switch-stand, target and all the appliances needed for its successful operation. A description of this is not required, owing to the fact that nearly all American railroad officers are familiar with its construction. It also exhibited split switches and a variety of frogs which are specially of its manufacture. It also had on exhibition two different kinds of ground switch-stands.

RAILROAD EARNINGS IN MAY.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.				
	1883.	1882.	Inc.	Dec.	P. c.	1883.	1882.	Increase.	Decrease.	P. c.	1883.	1882.	Inc.	Dec.	P. c.
Ala. Gt. Southern	290	290				\$ 77,781	\$ 54,853	22,928		41.7	\$ 298	\$ 189	79		41.7
Atch., Top. & Santa Fe	1,820	1,804	16		8.9	1,163,791	1,183,761		19,970	1.7	639	656		17	2.6
Boston, H. Tun. & W.*	72	72				28,932	21,733	7,199		32.7	401	302	99		32.7
Buff., N. Y. & Phila.*	535	395	140		35.4	225,656	192,296	33,360		17.4	422	487		65	13.2
Bur., Ced. Rap. & No.	714	645	69		10.7	208,671	199,276	9,395		4.7	292	309		17	5.5
Central of Ga.	726	712	14		1.9	155,700	144,164	11,536		8.0	214	202	12		5.9
Central Iowa	330	290	40		13.8	110,394	84,417	25,977		30.8	335	291	44		15.1
Central Pacific	2,972	3,006	34		1.1	2,099,000	2,342,298		243,298	10.3	706	774		68	13.8
Ches. & Ohio	517	435	82		18.9	337,922	257,040	80,882		31.5	654	591	63		10.7
Eliz. L. & Big San.	130	130				57,713	38,950	18,763		48.1	444	299	145		48.1
Chicago & Alton	850	850				630,097	559,577	70,520		12.5	741	658	83		12.6
Chi., Bur. & Quincy	3,230	2,925	305		10.4	1,888,077	1,505,261	382,816		25.4	585	515	70		13.6
Chi. & Eastern Ill.	245	245				127,511	146,779		19,268	13.1	520	599		79	13.1
Chi., Mil. & St. Paul	4,523	4,200	263		6.2	2,034,000	1,627,932	406,068		24.9	449	382	67		17.7
Chi. & Northwestern	3,590	3,250	340		10.4	2,122,698	2,110,947	11,751		0.5	591	650		59	9.1
Chi., St. P. M. & O.	1,230	1,009	221		22.0	446,746	402,883	43,863		10.9	363	399		36	9.0
Chi. & West Mich.	404	367	37		10.1	150,360	161,782		11,422	7.1	372	441		69	15.2
Cin., Ind. St. L. & Chi.	384	384				202,744	196,215	6,529		3.3	528	511	17		3.3
Cin., N. O. & Tex. P.	336	336				208,208	208,210				620	620			
Cleve., Akron & Col.	144	144				44,251	43,255	996		2	307	300	7		2.3
Danbury & Norwalk	35	35				16,561	15,329	1,232		8.1	473	438	35		8.1
Denver & R. Gr.	1,043	1,062	581		54.8	631,900	606,400	25,500		4.2	384	571		187	32.7
Des M. & Ft. Dodge	138	84	54		64.3	20,044	24,790		4,746	19.0	145	295		150	50.8
Det., Lan. & Nor.	226	226				128,771	134,576		5,805	4.3	570	596		26	4.3
Eastern	284	284				283,345	273,369	9,976		3.6	998	963	35		3.6
E. Tenn., Va. & Ga.	1,070	900	170		18.9	278,837	231,146	47,691		20.6	250	257	7		2.8
Evansv. & T. H.	146	146				59,719	61,865		5,146	8.3	388	424		36	3.8
Flint & Pere Mar.	347	347			0.6	229,694	175,113	54,581		31.2	603	579	24		30.2
Florida Transit	243	187	56		29.9	43,378	33,163	10,215		30.9	179	177	2		1.1
G'n B. Win. & St. P.	220	220				35,699	30,289	5,410		18.0	162	138	24		18.0
Gulf, Col. & S. F.	483	370	113		30.5	140,773	76,564	64,209		83.4	291	207	84		40.6
Hannibal & St. Jo.	292	292				194,394	165,630	28,764		17.3	665	567	98		17.3
Houston, E. & W. Tex.	120	88	32		36.4	25,775	23,057	2,718		11.8	215	262		47	18.0
Ill. Cen., Ill. lines	928	919	9		0.9	509,200	518,653		9,453	1.8	549	564		15	2.7
Iowa lines	402	402				161,283	143,054	18,229		12.7	401	356	45		12.7
Southern Div.	578	578				276,733	229,621	47,112		30.5	479	397	82		20.5
Ind., Bloom. & West.	695	555	140		20.1	234,150	182,555	51,595		28.2	337	329		8	2.4
Kan. C., Ft. S. & G.	389	389				135,524	107,566	27,958		25.7	348	295	53		17.9
Kan. C. L. & S. Kan.	399	385	14		3.6	132,849	73,367	59,482		81.4	333	191	142		73.7
Lake Erie & Western	386	386				98,981	94,484	4,497		4.8	256	245	11		4.8
Little Rock & Ft. S.	168	168				42,220	30,769	11,451		37.6	251	183	68		37.6
Little Rk., Miss. R. & T.	173	156	17		10.9	28,516	19,732	8,784		44.6	165	126	39		30.1
Long Island	354	354				201,774	180,712	21,062		11.7	570	516	54		11.7
Louisville & Nash.	2,070	2,028	42		2.1	1,055,006	958,130	96,876		10.1	510	472	38		10.1
Marq., Hought. & Ont.	97	88	9		10.2	181,845	178,223		3,622	54.2	844	2,025		1,181	58.3
Memphis & Charles	292	292				86,388	74,007	12,381		16.7	296	253	43		16.7
Mil. L. S. & West.	325	275	50		18.2	84,805	63,938	20,867		32.6	261	232	29		12.5
Mo. Pacific lines:															
Central Branch	388	388				117,375	57,902	59,473		102.6	302	149	153		102.6
Int. & Gt. Northern	825	775	50		3.2	266,412	262,111	4,301		1.6	323	338		15	4.4
Mo., Kan. & Tex.	1,374	1,207	167		13.9	575,685	480,333	95,352		19.9	419	398	21		5.2
Mo. Pacific	990	785	205		26.2	719,501	560,907	158,594		28.3	727	714	13		1.9
St. L., I. M. & So.	889	719	169		23.2	558,788	319,120	239,668		7.1	634	722		88	12.4
Texas & Pacific	1,487	1,234	253		20.5	496,688	421,219	75,449		17.9	334	341		7	2.1
Wabash, St. L. & P.*	3,520	3,350	170		5.1	1,213,946	1,204,804	9,082		0.7	345	360		15	4.2
Mobile & Ohio	528	528				143,294	134,377	8,917		6.7	271	255	16		6.7
Nash., Chat. & St. L.	539	529	10		2.4	171,079	154,163	16,916		10.9	317	293	24		8.2
N. Y. & N. England	399	396	3		0.7	290,952	289,722	2,230		0.4	729	732		3	0.4
N. Y., Susq. & West.	147	86	61		70.9	87,054	57,835	29,219		50.4	592	672		80	12.0
Norfolk & Western	453	428	25		5.9	205,663	185,322	20,341		11.0	454	433	21		4.9
Northern Central	322	322				409,132	405,695	3,437		7.2	1,550	1,446	104		7.2
Northern Pacific	1,709	972	736		76.4	775,600	616,230	159,370		25.9	456	634		178	28.0
Ohio Central	284	232	52		22.4	102,870	82,555	20,315		24.1	362	357	5		1.4
Ohio Southern	138	128	10		7.8	30,302	30,832		530	1.7	219	241		22	9.1
Pennsylvania	2,060	1,954	106		5.0	4,303,006	4,108,877	194,129		4.7	2,089	2,103		14	0.6
Peo., Dec. & Evansv.	254	254				60,014	55,524	4,490		8.1	236	218	18		8.1
Phila. & Reading	1,000	1,000				1,696,877	1,703,469		6,592	0.4	1,697	1,703		6	0.4
Rich. & Danville lines:															
Char., Col. & Aug.	238	238				47,961	44,052	3,909		8.9	202	185	17		8.9
Col. & Greenville	296	296				37,308	38,987		1,679	4.3	126	132		6	4.3
Rich. & Danville	757	757				297,287	263,380	33,907		12.9	393	348	45		12.9
Va. Midland	352	352				137,766	119,228	18,538		15.6	391	339	52		15.6
Western N. C.	190	165	25		15.2	27,528	16,982	10,546		62.0	145	103	42		40.8
St. L. A. & T. H.	195	195				101,480	102,923		1,443	1.4	520	528		8	1.4
Main Line	121	121				59,627	70,647		11,320	16.0	493	586		92	16.0
St. Louis & Cairo	146	146				38,096	28,943	9,453		33.1	261	196	65		33.1
St. Louis & San Fran.	750	660	90		13.6	296,756	253,419	43,337		17.0	396	384	12		3.1
St. Paul & Duluth	196	196				101,732	83,582	18,150		21.6	519	426	93		21.6
St. P., Minn. & Man.	1,326	912	414		45.4	727,590	858,003		131,394	15.3	540	942		393	41.8
Scioto Valley	128	128				43,386	44,006		620	1.4	339	344		5	1.4
South Carolina	243	243				75,089	74,248	841		1.1	309	305	4		1.1
Tol., Cin. & St. L.*	700	490	210		42.9	83,060	75,000	8,060		10.7	119	153		34	22.6
Vicks. & Meridian	142	142				35,699	30,832	4,868		15.7	251	217	34		15.7
Vicks., Sh'pvt. & P.*	73	73				2,448	2,448		375	13.3	24	24		5	13.3
West Jersey	186	186				90,492	73,493	16,919		25.4	491	437	54		13.4
Wisconsin Central *	390	390				115,100	126,357		11,257	8.9	296	324		28	8.9
Total, 84 roads	59,264	53,065	6,503			32,169,773	29,886,893	2,282,880	580,698	7.6	543	557		14	2.2
Total inc. or dec.			5,609	34	10.4									14	2.2

RAILROAD EARNINGS, FIVE MONTHS ENDING MAY 31.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.					
	1883.	1882.	Inc.	Dec.	P. c.	1883.	1882.	Increase.	Dec.	P. c.	1883.	1882.	Inc.	Dec.	P. c.	
						\$	\$	\$	\$		\$	\$	\$	\$		
Ala. Gt. Southern	290	290				402,137	308,050	94,077		30.5	1,387,106	325		30.5		
Atchafalaya, Top. & S. F.	1,820	1,786	34		1.9	5,510,917	5,683,809		172,952	3.0	3,028,318		154	4.8		
Bur. Cedar Rap. & No.	714	645	69		10.7	1,064,239	1,080,141		15,902	1.5	1,461,167		184	10.9		
Central of Georgia	726	712	14		1.9	1,272,000	1,163,781	108,219		9.3	1,752,163	117		7.2		
Central Iowa	330	290	40		13.8	484,290	445,522	38,768		8.7	1,467,153	68		4.5		
Central Pacific	2,920	2,935	15		0.5	9,372,106	9,026,896		554,700	5.6	3,209,382	173	51	5.1		
Ches. & Ohio	517	435	82		18.9	1,496,793	1,127,737	333,056		29.5	2,825,592	233		8.1		
Eliz. Lex. & B. Sandy	130	130				268,430	169,069	106,361		65.7	2,065,124	818		65.7		
Chi. & Alton	850	850				3,105,543	2,816,864	288,679		10.2	3,654,314	340	10	10.2		
Chi. Bur. & Quincy	3,230	2,925	305		10.4	9,545,493	7,718,451	1,827,042		21.1	2,893,639	254		9.6		
Chi. & Eastern Ill.	245	245				643,866	679,757		35,891	5.3	2,628,775		147	5.3		
Chi. & Gd. Trunk	335	335				1,172,568	862,072	310,496		36.0	3,500,273	927		36.0		
Chi. Mil. & St. Paul	4,523	4,235	288		6.8	8,667,000	7,517,708	1,149,292		15.3	1,916,175	141		7.9		
Chi. & Northwestern	3,590	3,208	382		11.9	8,029,907	8,571,730		58,177	0.9	2,404,272		268	10.1		
Chi. St. P., Minn. & O.	1,230	1,009	221		22.0	1,899,074	1,853,970	45,104		2.4	1,544,183	293	161	19.1		
Chi. & West Mich.	404	367	37		10.1	620,324	633,066		12,772	2.0	1,536,125		189	11.1		
Cin., Ind., St. L. & Chi.	384	384				968,019	999,083		31,064	3.1	2,521,202	602	81	3.1		
Cin., N. O. & Tex. P.	336	336				947,248	991,532		44,284	4.5	2,819,251		132	4.5		
Cleve., Akron & Col.	144	144				203,886	192,290	11,596		6.0	1,416,135	81		6.0		
Denver & Rio Grand	1,418	1,062	356		33.5	2,709,000	2,580,499	128,501		5.0	1,910,240		520	21.4		
Des M. & Ft. Dodge	138	84	54		64.3	113,738	150,678		36,940	24.5	824,179		970	53.0		
Det. Lan. & No.	226	226				386,798	386,798		39,796	6.3	2,041,218		177	6.3		
Eastern	284	284				1,337,277	1,218,243	119,034		9.8	4,700,420	419		9.8		
East Tenn. Va. & Ga.	1,070	900	170		18.9	1,519,258	1,189,390	329,868		27.7	1,420,132	99		7.6		
Evansville & T. H.	146	146				283,769	307,112		23,343	7.6	1,944,213		159	7.6		
Flint & Pere Marq.	347	345	2		0.6	1,052,337	891,927	160,410		18.0	3,032,258	447		17.2		
Florida Transit	243	187	56		29.9	206,846	180,433	26,413		14.6	851,965		114	11.9		
Grand Trunk	2,321	2,225	96		4.3	7,076,812	6,491,375	585,437		9.0	3,049,218	131		4.5		
Green Bay, Win. & St. P.	220	220				157,695	149,330	8,365		5.6	717,679	38		5.6		
Gulf, Col. & S. F.	483	370	113		30.5	697,546	407,039	290,507		71.4	1,444,100	344		31.3		
Hannibal & St. Jo.	292	292				1,001,637	787,403	214,234		27.2	3,430,267	733		27.2		
Houston, E. & W. Tex.	130	88	42		47.7	123,812	98,979	24,833		25.1	1,032,125		92	8.4		
Ill. Cent., Ill. lines	926	919	7		0.8	2,546,538	2,066,189	480,349		119,651	4.5	2,750,201		131	5.2	
Iowa lines	402	402				775,022	765,777	9,245		1.2	1,928,195	23		1.2		
Southern Div.	578	578				1,736,876	1,349,830	387,046		27.9	2,688,235	653		27.9		
Ind., Bloom. & West.	695	555	140		25.2	1,160,936	964,006	196,930		21.2	1,882,178		56	3.2		
Kan. C. Ft. S. & Gulf.	389	365	24		6.6	742,238	649,721	92,517		14.2	1,908,178	128		7.2		
Kan. Cy., L. & So. Kan.	399	385	14		3.6	578,718	507,910	270,808		53.3	1,450,955	495		51.3		
Lake Erie & Western	386	386				551,573	530,481	21,092		3.9	1,430,175	301		30.3		
Little Rock & Ft. Smith	168	168				217,962	167,556	50,406		30.3	1,397,066		30.3			
Little R. & Miss. R. & Tex.	173	156	17		10.9	157,385	98,323	59,062		60.3	910,630	280		44.4		
Long Island	354	340	14		4.1	793,295	721,851	71,444		9.9	2,240,123	117		5.5		
Louisville & Nashv.	2,035	2,028	7		0.3	5,277,329	4,905,400	371,929		7.6	2,593,240	174		7.2		
Mar., Hought. & Ont.	97	88	9		10.2	156,898	283,803		126,905	44.7	1,618,225		1,007	40.9		
Memphis & Charleston	292	292				484,970	426,889	58,081		13.6	1,662,162	199		13.6		
Mo. Pacific	317	275	42		14.9	378,050	337,975	40,075		11.9	1,193,129		36	2.9		
Central Branch	388	388				569,735	326,782	242,953		74.3	1,468,842	626		74.3		
Int. & Gt. No.	795	775	20		2.6	1,408,519	1,229,174	179,345		21.7	1,882,186	296		18.5		
Mo., Kan. & Tex.	1,374	1,207	167		13.9	2,781,101	2,191,422	589,679		26.1	2,002,181		187	10.1		
Mo. Pacific	990	785	205		26.2	3,536,134	2,679,891	856,243		32.0	3,572,344	128		3.8		
St. L., Iron Mt. & So.	882	719	163		23.2	2,923,841	2,701,602	222,239		8.2	3,315,377		442	17.1		
Texas & Pacific	1,487	1,234	253		20.5	2,380,328	1,735,935	644,393		37.0	1,601,147	194		13.9		
Mobile & Ohio	528	528				840,040	742,765	97,275		13.1	1,591,140	184		13.1		
Nash., Chatta. & St. L.	539	526	13		2.4	831,328	844,618	86,709		10.3	1,728,106	192		7.6		
N. Y. & New England	399	399				1,344,679	1,247,091	97,588		7.0	3,345,149	196		6.2		
N. Y., Susq. & West.	147	86	61		70.9	277,343	246,985	30,358		52.8	2,567,272		305	10.6		
Norfolk & Western	433	428	5		1.2	1,005,825	850,116	155,709		18.3	2,323,196	337		17.0		
Northern Central	322	322				2,468,450	2,121,892	346,558		16.3	7,666,590	1,076		16.3		
Northern Pacific	1,641	972	669		69.0	2,721,343	1,954,098	766,645		39.2	1,658,211		353	17.3		
Ohio Central	263	232	31		13.4	396,700	375,140	21,560		5.7	1,508,137		109	6.7		
Ohio Southern	138	128	10		7.8	164,572	144,214	20,358		14.1	1,193,127	96		5.8		
Pennsylvania	2,050	1,954	96		4.9	20,197,713	18,557,066	1,640,647		8.9	9,832,949	355		9.8		
Peoria, Dec. & Evans.	254	254				277,360	310,091		32,698	10.5	1,069,129		139	13.5		
Phila. & Reading	1,000	995	5		0.5	8,153,370	7,816,766	336,604		4.3	8,155,786	299		3.8		
Rich. & Danville lines:																
Char., Col. & Aug.	238	238				349,685	296,604	53,081		18.0	1,469,126	223		18.0		
Col. & Greenville	296	296				335,113	302,167	32,946		10.9	1,321,021	111		10.9		
Rich. & Danville	757	757				1,506,115	1,444,036	61,479		4.3	1,990,190	82		4.3		
Va. Midland	352	352				597,914	512,736	85,208		16.6	1,099,145	242		16.6		
Western N. C.	190	165	25		15.2	123,103	78,709	44,394		56.2	648,477	171		35.6		
St. L., Alt. & T. Haute:																
Main Line	195	195				569,474	512,016	57,458		11.2	2,920,295	295		11.2		
Belleville Line	121	121				328,531	337,287		8,756	2.6	2,715,787		72	2.6		
St. L. & Cairo	146	146				148,953	143,990	4,954		3.4	1,020,986	34		3.4		
St. L. & San Francisco	730	680	70		10.6	1,437,055	1,272,623	164,432		12.9	1,969,128	41		2.1		
St. P. & Duluth	196	196				399,077	330,889	68,088		20.9	2,039,188	351		20.9		
St. P., Minn. & Manitoba	1,296	912	384		42.6	3,148,705	2,774,616	374,089		13.5	2,430,342		612	20.1		
Scioto Valley	128	128				195,985	198,627		2,642	1.3	1,531,152		21	3.3		
South Carolina	243	243				570,014	537,748	32,266		10.1	2,346,131		103	4.4		
Vicksburg & Meridian	142	142				205,100	188,044	17,056		9.1	1,4,					

monotonous duty. Paragraph c would perhaps be more readily apprehended by some if it were in a negative form, viz.: "A certain place must not be announced as the 'next station' until after you have made all the stops for crossings, drawbridges, etc., that you expect to make before reaching it;" but, as any misunderstanding of the rule as above copied would very soon correct itself, so to speak, there seems to be no good reason for adopting the inverted form.

To those who travel much no argument is needed to show that such a rule as No. 101 should be carefully enforced. The instances where brakemen allow inward and outward passengers heedlessly to crowd each other on car platforms, and where, for lack of a little foresight, ladies and children are allowed to get off in the snow or rain when they might just as well be conducted to a car nearer the station, are far more frequent than they ought to be. It is a settled fact that a considerable share of the traveling public are sure to leave their wits at home, and trainmen (and the rest of us) may as well acquiesce in it and not neglect the comparatively trifling amenities simply because the passenger's woes are "his own fault."

Rule 103 (the last clause) is not a common one, and perhaps cannot easily be made of much value; but that there is need of it, or something equivalent, no one questions. The railroads already do much more work than ought to be necessary in the way of keeping neat and tidy cars for slovenly passengers; and yet the comfort of the more civilized passengers would often, on long journeys, be greatly enhanced by a little care on the part of the brakemen. Of course a conductor cannot have his brakemen mop out the smoking-car every hour or two; but sometimes a few peanut shells swept up, or orange-peels thrown out will make all the difference between a pleasant journey and an unpleasant one to some passenger who is afflicted with fastidious tastes.

I have attempted to do word Rule 104 that when enough pecks per minute of dust and cinders are moving in to more than equal the gaseous impurities already in the car, the conductor may feel authorized to close the ventilators to such a degree as he shall deem best. There is no necessity of cautioning him against sacrificing warmth for purity, for the average passenger can be depended upon to fight very effectually for his "rights" in this respect. If any conductor ever succeeds in purifying the air of a car when the passengers desire more heat instead, he can be safely recommended as skillful enough to conduct a pleasure excursion to the North Pole.

THE SCRAP HEAP.

Locomotive Building.

H. K. Porter & Co. in Pittsburgh are building a locomotive of 2 ft. gauge, with cylinders 5 in. in diameter and 10 in. stroke. It has no cab and weighs about 3 tons. It is to be used in the mills of the Scranton Steel Co., in Scranton, Pa., for pushing the little iron cars on which steel blooms are carried. It is probably the smallest locomotive ever built in this country for actual use.

The Pittsburgh, Fort Wayne & Chicago shops in Allegheny, Pa., have just turned out the fourth of an order of 10 consolidation freight engines for the road, and the others are well advanced.

The Schenectady Locomotive Works in Schenectady, N. Y., has recently completed several heavy passenger engines for the New York Central & Hudson River road. They have driving wheels 5 ft. 10 in. in diameter, and the engine and tender trucks are mounted on paper wheels.

The Cooke Locomotive Works, in Paterson, N. J., are building six narrow-gauge freight engines for the Denver & South Park Division of the Union Pacific.

The Rome, Watertown & Ogdensburg shops in Oswego, N. Y., have just completed a hard coal burning locomotive with 17 by 24-in. cylinders and 5-ft. drivers.

The total number of new locomotives turned out and shipped from the shops for the past month was 53. Of that number the Rogers Works turned out 30, or one per day; the Cooke Works 13, and the Grant Works 10. The number of locomotives turned out last month exceeded by 21 the production of the previous month.—*Paterson (N. J.) Press*, July 2.

Car Notes.

The Delaware, Lackawanna & Western shops at Dover, N. J., are building nine new express cars for the road. They are fitted with Miller platforms and couplers, Westinghouse automatic brakes and are mounted on 33-in. Allen paper wheels.

The Gilbert Car Manufacturing Co. in Troy, N. Y., is building a train of cars to be used next season for the Mapleson opera troupe. One of the cars is designed especially for the use of Madame Patti, and is 55 ft. long, containing a saloon, bedrooms, dining-room, closets, etc., all very handsomely fitted. The other cars, two in number, are 64 ft. long, and are of the "boudoir" pattern, designed by Col. Mann, and introduced by him to some extent in Europe.

The Lehigh Car Manufacturing Co. in Stanton, Pa., is building 80 ore cars for the Juragua Iron Co. in Cuba.

The Youngstown Car Manufacturing Co. has been organized in Youngstown, O., as successor to the firm of Milliken, Boyd & Co., of the Youngstown Car Works. The capital stock is \$100,000 and the officers are: President, L. E. Cochran; Secretary and Treasurer, B. F. Boyd; General Manager, Andrew Milliken.

The Swissvale Car Co. at Swissvale, Pa., is now prepared to build passenger cars of all kinds. Heretofore the work has been confined to the building of freight cars and the building and repairing of Woodruff sleeping cars.

The Southern Car Works in Knoxville, Tenn., have taken a contract to build 500 freight cars for the East Tennessee, Virginia & Georgia road. The Knoxville Car Wheel Co. will furnish the wheels and axles.

Iron Notes.

Greenwood Rolling Mill at Tamaqua, Pa., which has been closed for several months, has been leased by Daniel Snapp and H. A. Weldy, who will start the mill up at once.

The Allentown Rolling Mill Co., at Allentown, Pa., has started up its puddling mill.

The Wetherill Steel Casting Co. has been organized at Chester, Pa., with \$500,000 capital stock, and will build steel works in that town.

Rebecca Furnace at Kittanning, Pa., has gone out of blast.

Manufacturing Notes.

The Chalmers-Spence Co., manufacturer of patent air-space covering for boilers, patent asbestos-lined removable

pipe coverings and the national steel tube-cleaner for boiler tubes, has removed its office from No. 28 John street to its new factory building, No. 419 East Eighth street, in New York.

The Damascus Bronze Co. in Pittsburgh has received an order for 40,000 lbs. of its Damascus bronze for the Boston & Albany road.

The Rail Market.

Steel Rails.—Quotations for summer delivery continue at \$38 to \$39 per ton at mill, but some large orders are said to have been placed at \$37 and \$37.50 for delivery later in the season.

Rail Fastenings.—Spikes are quoted at \$2.60 per 100 lbs. in Pittsburgh. Track bolts are quoted at \$3 per 100 lbs. for square nuts and \$3.20 to \$3.30 for hexagon, with a fairly active market. Splice bars are 2 cents per pound in Pittsburgh.

Old Rails.—The market is quiet, with small sales. Some lots of rails have been sold in Philadelphia at \$22 per ton for tees and \$25 to \$25.50 for double-heads.

Pied.

A printer accepted a job of car-coupling at York, Pa., the other day. Two hours afterward his pied form was in the company's hospital.—*Pittsburgh Telegraph*.

A red man of the forest took my ticket to-day on a Lake Shore & Michigan Southern train. Billy Wilson, a full-blooded Cattaraugus Indian, punches tickets on this road. He is not the kind that Gen. Crook is punching up in the Sierra Madre Mountains. He does not look like the usual type of Indians. Instead of being tall and slender, he is very corpulent and a gentlemanly appearing fellow.—*Titusville Herald*.

As a train on the Buffalo, New York & Philadelphia road was running at the rate of 30 miles an hour Thursday, at Yorkshire Center, a crow flew straight into the headlight, smashing the glass. It was caught by the neck between two remaining pieces of glass, and in that position was carried to Buffalo.—*Utica (N. Y.) Herald*.

They do better than that in Texas. There it is usually a fat calf which gets caught on the bumpers; nothing less eatable than a 25-lb. turkey satisfies the Texas fireman.

Seals for Bonded Cars.

The Secretary of the Treasury has decided to continue the present system of fastening cars employed in the transportation of imported merchandise, with lead seals, and has awarded the contract for supplying them for the present fiscal year to E. J. Brooks & Co., of New York, who were the lowest bidders.

Classical Education.

"Do you not think that American institutions are progressive?" inquired a Boston girl of an eminent English tourist on the Baltimore & Ohio Railroad.

"Indeed I do," was the hearty reply. "The classical education of even your railroad brakemen makes them far superior to the common guards of our English system."

"What do you mean by the classical education of our brakemen?" inquired the Boston girl with no small show of surprise.

"Why, I notice they open the car door and call out the names of the stations in an unknown tongue. I am familiar with seven distinct languages, but your American brakemen are a Gulf of learning compared to our most eminent scholars. Their salaries must certainly be enormous, and their erudition vast and unfathomable."—*Arkansas Traveler*.

A Criticism.

The word "derailed" is a nice scholarly substitute for jumping the track. But there is nothing cheering in the prospect of this word opening the way for the de-pave-mented or de-boardwalked or de-any-thing-else that a man, woman or child or thing may tumble off of.—*Pittsburgh Telegraph*.

Fast Time.

Locomotive No. 972, of the Philadelphia & Reading road, which was at the Chicago Exposition, was given a trial on the Washington Branch of the Baltimore & Ohio on Friday, June 29. It was first put on a regular trip, taking the Western Express from Camden Station, Baltimore, to Washington, 40 miles, in 53 minutes, making two stops in that distance. Shortly afterward it returned to Baltimore with the Pittsburgh Express, making the run in 46 minutes, including 4½ minutes for stops. At 2 p. m. a special train of four coaches was made up and started from Baltimore with this engine. This train passed Laurel, 24½ miles from Camden Station, in 22½ minutes; Hyattsville, 34½ miles, in 32½ minutes; Metropolitan Junction, 39 miles, in 37½ minutes, reaching Washington, 40 miles, in 39 minutes. Between Laurel and Hyattsville it is said that several consecutive miles were run in 49 seconds each.

The engine has 21 by 22-in. cylinders; and driving-wheels 68 in. in diameter. It has the Wootton fire-box for burning waste coal or dust.

The Keely Motor Fourth of July Excursion.

Early this morning there was a crowd of hopeful looking men gathered at the door of Inventor Keely's famous motor shop. Many were holders of stock in the Motor Company, and they expected, in accordance with one of the company's promises, to take a triumphant ride to New York behind the great 400-horse power vibratory engine. It had been predicted in circulars and newspapers that on July 4 the wonderful motor engine would whisk a train of Pullman palace cars from this city to New York in 40 minutes. Beyond the crowd at the door there was nothing about the shop to indicate that any event of unusual importance was due. The shop was dark and silent and there was not even a rag on the three-foot flag-staff at the peak of the roof. While two men were beating tattoos on the door with their canes, a second story window was raised and a man's head came out.

"Where's Mr. Keely?"
"When will the excursion start?"
"Do we get tickets here?"
"Where is the train?"
"Will we come back to-night?"

These were a few of the conundrums that struck the ears of the evidently astonished guardian of the place. "Who are you?" inquired the watchman, allowing his eyes to wander on the crowd and the baggage and the policeman and the grinning spectators on the opposite side of the street.

"We are stockholders," answered half a dozen voices.
"Well, there ain't any meeting here to-day," replied the watchman.

"Let me talk to him," said the old man with the red necktie to his colleagues. They fell back and he addressed the man at the window. "We are stockholders who are anxious to go to New York behind Mr. Keely's new motor locomotive."

"When?" asked the watchman.

"To-day! Now! At once!"

The head ducked in and the crowd heard shrieks of laugh

ter. A moment later the head reappeared and said: "Gentlemen, there will be no excursion from here to-day. The machine is not ready for work yet." The head disappeared, the window was closed, and the two dozen astonished and grievously disappointed stockholders went across the street, took a drink and dispersed.—*Philadelphia Dispatch* of July 4.

A Railroad Lunch.

"Now, my dear," said Mr. Spoopendyke, rubbing his hands gleefully and contemplating his wife from the opposite seat with a pleasant smile. "Now, my dear, suppose we take a look at the lunch, of which we have had such remarkable accounts. If there is anything nice when a man is traveling, it is a home-made lunch. Develop the viands and let joy be unconfined!" and Mr. Spoopendyke laughed outright in anticipation of the gustatory delights in store for him.

"All right," giggled Mrs. Spoopendyke, opening the basket with trembling hands. "Now, you hold that, and don't you open anything until I get it all out," and Mrs. Spoopendyke handed him a long roll of something done up in a coarse brown paper.

"How much more of this is there to get out?" demanded Mr. Spoopendyke, sniffing at the paper and detecting Bologna sausage, a thing he detested. "What is this, anyway, a club to keep the rest of the lunch in order? Is this thing the police force of this lunch? Fetch forth the law-abiding elements, if you have any! Never mind the executive of this feast; produce the laboring faction, the tax-paying end of the business."

"Here's some cheese," murmured Mrs. Spoopendyke, "and a pie, and some smoked beef, and some herring, and—"

"Haven't ye got some salt somewhere?" barked Mr. Spoopendyke, planting the bologna on end in the centre of the pie. "How'm I to quench my thirst after eating all this truck, unless I have salt? Where's the mustard that goes with these mercies?" and Mr. Spoopendyke dove into the package of beef, and scattered the contents over his wife's lap. "I'll bet th bologna can whip the cheese in four rounds!" he yelled, hauling the offending sausage out of the pie and jabbing it through the cheese. "Hurray! Now, we'll sponge him off with the herring for the next round!" and Mr. Spoopendyke seized a fish by the tail and slammed it into the basket.

"Don't," pleaded Mrs. Spoopendyke, looking helplessly on.

"I like those things, if you don't."

"Can't ye let the lunch have a little fun?" squealed Mr. Spoopendyke, hammering at the cheese with the sausage. "Of course you like these things! They're right in your line! All you want is a strike and a step-ladder to be a salt mine! Where's my lunch? Bring on the delicacies calculated to supply the waste tissue of Spoopendyke!" and the worthy gentleman drove the sausage clear through the pie and impaled the herring on the other end.

"Here's a Charlotte, and a—" commenced Mrs. Spoopendyke.

"Hand me the blushing Charlotte!" howled Mr. Spoopendyke, who had fixed his mind on cold chicken, and saw no realization of his anticipations. "Show me the Charlotte just budding into womanhood, and she shall have the pie! Give me—hey! What's that?"

"This is a can of beans!" exclaimed Mrs. Spoopendyke, brightening a little. "You know you always liked beans."

"Let's have 'em!" growled Mr. Spoopendyke, reaching for them. "What have you got to open 'em with?"

"I'm afraid I left the can-opener home," whispered Mrs. Spoopendyke, rummaging through the basket.

"How d'ye propose to open 'em, then?" roared Mr. Spoopendyke, setting his teeth and breathing hard. "Show me the spring that busts this cover off! Guide me to the combination of this stem-winding can of beans! Maybe this'll do it!" and Mr. Spoopendyke again grabbed the sausage and went for the can. "How'm I getting on?" he yelled, as the bologna flew in all directions. "Think you begin to smell those beans any more plainly than you did? Wa-h-h!" he shrieked, as a huge chunk of the pork broke off short and landed in his ear. "This dod gasted hog don't know who he's fooling with! Let me introduce you to Spoopendyke!" and he ground the sausage flat against the can and dropped the debris on the floor.

"I don't know what we're going to do!" murmured Mrs. Spoopendyke in great distress.

"Now watch the triumph of mind over beans!" howled Mr. Spoopendyke, opening the window and placing the can on the sill. "The reward of genius!" he roared, as he brought the window down on the can.

Mrs. Spoopendyke dodged just in time, and her unfortunate spouse caught the bean part of the feast fairly in front, and was covered from his eyebrows to his ankles.

"That what ye wanted?" he gasped, as the full extent of the calamity dawned upon him. "That what ye been trying to get me to do? Dod gast the measly beans!" and Mr. Spoopendyke made for the smoking-car, and was seen no more till dark.

"I don't care," soliloquized Mrs. Spoopendyke, assuring herself that the Charlotte had not been injured. "He might have waited a moment, and he would have had some cold chicken. But, of course, if he has made a lunch on beans he won't care for anything else." And with this consolatory reflection Mrs. Spoopendyke ate the chicken and Charlotte in alternate bites, and composed herself for a comfortable nap.—*Brooklyn Eagle*.

Saved by a Woman.

The courage, thoughtfulness and promptitude of Mrs. Julia Rogers, who lives near where the wash-out in the Detroit, Grand Haven & Milwaukee track occurred near Lowell, on Monday, saved the passenger train coming west just afternoon Tuesday from destruction. The train was nearly due; Mrs. Rogers knew it and rushed out in the storm and up the track half a mile, where the train was flagged and stopped. The engineer says it was the only thing that could have averted a terrible accident, as the wash-out was at a point on a curve where it could not possibly have been seen in time to stop, and the only thing he and the firemen could have done was to jump the train and let it go tumbling into the ditch. The train was behind time, and was running to make up time, as the road was supposed to be clear from Lowell here.—*Grand Rapids (Mich.) Eagle*, June 27.

A Long-Armed Fireman.

"Yes," said Mr. Dooflicker, as he drew his chair out on the porch to the family circle, "I had some wild experience when I was a locomotive engineer. I remember one night I was ordered to take a doctor from Chicago to Mendota in the quickest possible time. To make my engine lighter I uncoupled the tender and left it on a side track. When the doctor took a seat on the fireman's box I threw the lever down in the corner and gave her steam. Away we jumped like a scared kangaroo. The doctor's eyes bulged out like a pair of porcelain door-knobs as we hustled over the prairie toward Riverside.

"What's that—a post?" asked the doctor as we passed something in a jiffy.

"It was a coal shed 120 ft. long. So you can see how fast we were going."

"What's that funny looking fringe on our left?" asked the doctor.

"Them's the telegraph poles," answered the fireman as he stopped half a minute from shoveling coal, just as we zipped through the shop yards at Aurora.

"Well, we made Mendota, without a stop, in forty-one minutes and a half, just two miles to the minute, and I boiled the coffee in my dinner-pail on the driving boxes."

"What a long-armed fireman you must have had, pa?" put in young Theophilus Doolficker, as he looked up from the copy of *Æsop's Fables* that lay on his lap.

"How's that?" asked Doolficker.

"Why, to shovel coal in Aurora from a tender that stood on a side track in Chicago."

Doolficker went in the house.—*Chicago Herald.*

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Central, of New Jersey, special meeting, at the office in Jersey City, July 6.

Gulf, Colorado & Santa Fe, special meeting, in Galveston, Tex., Aug. 1, at noon, to vote on the question of issuing second-mortgage bonds.

Dividends.

Dividends have been declared as follows:

Cheshire, 1½ per cent., semi-annual, on the preferred stock, payable July 10.

Chicago, Iowa & Nebraska (leased to Chicago & North-western), 4 per cent., semi-annual, payable July 2.

Concord & Portsmouth (leased to Concord Co.), 3½ per cent., semi-annual, payable June 30.

Dela ware, Lacawanna & Western, 2 per cent., quarterly, payable July 20. Transfer books close July 5.

Detroit, Hillsdale & Southwestern (leased to Lake Shore & Michigan Southern), 1½ per cent., semi-annual, payable July 5.

East Mahanoy (leased to Philadelphia & Reading), 3 per cent., semi-annual, payable July 16.

East Pennsylvania (leased to Philadelphia & Reading), 3 per cent., semi-annual, payable July 17.

Little Schuylkill (leased to Philadelphia & Reading), 3½ per cent., semi-annual, payable July 13; also an extra dividend of 1 per cent., payable at the same time.

Manhattan, 1½ per cent., quarterly, on the first-preferred stock, payable July 2 "provided the legal restraint prohibiting such payment is removed."

Patterson & Hudson River (leased to New York, Lake Erie & Western), 4 per cent., semi-annual, payable July 3.

Patterson & Ramapo (leased to New York, Lake Erie & Western), 4½ per cent., semi-annual, payable July 3.

Philadelphia & Trenton (leased to Pennsylvania Railroad Co.), 2½ per cent., quarterly, payable July 10.

Pittsfield & North Adams (leased to Boston & Albany), 2½ per cent., semi-annual, payable July 2.

Portland, Saco & Portsmouth (leased to Eastern Co.) 3 per cent., semi-annual, payable July 16.

Providence & Worcester, 3 per cent., semi-annual, payable July 2.

Shore Line (leased to New York, New Haven & Hartford), 4 per cent., semi-annual, payable July 5.

Tidewater Pipe Line, 10 per cent., semi-annual, payable on demand.

United New Jersey (leased to Pennsylvania Railroad Co.), 2½ per cent., quarterly, payable July 10.

Vermont Valley, 3 per cent., semi-annual, payable June 30.

Ware River (leased to Boston & Albany), 3½ per cent., semi-annual, payable July 5.

Railroad and Technical Conventions.

The *General Baggage Agents' Association* will hold its next semi-annual meeting at the Tremont House, Chicago, Aug. 8.

The *Road-Masters' Association of America* will hold its first regular meeting in St. Paul, Minn., Sept. 12.

The *Master Car-Painters' Association* will hold its annual convention in Baltimore, Sept. 19.

The *New England Road-Masters' Association* will hold its first annual meeting in Boston, Sept. 20.

The *American Street Railway Association* will hold its next meeting in Chicago, Oct. 9.

The *General Time Convention* will hold its fall meeting at the Grand Pacific Hotel in Chicago, Oct. 11.

The *Southern Time Convention* will hold its fall meeting at No. 46 Bond street, New York, Oct. 17.

The *American Association of Railroad Superintendents* will hold its fall meeting in Washington, Oct. 23.

Foreclosure Sales.

The *Nantasket Beach* road was offered at public sale in Boston, June 27, by direction of the trustee. No bids were received above the minimum price fixed, and the sale of the road was adjourned for one month. The Hotel Pemberton and 23 acres of land on the beach, the property of the company, were sold for \$80,000.

Mail Service Extensions.

Mail service has been ordered over new railroad lines as follows:

Maryland Central, service ordered between Baltimore and Belair, Md., 29 miles, to begin July 9.

Massachusetts Railroad Commission—Hearing on Grade Crossings.

The Massachusetts Railroad Commission will give a public hearing, on the question of electric and other signals for the protection of highway crossings at grade, at the office of the Board, No. 7 Pemberton Square, Boston, July 16, at 10 a. m. The hearing is given in consequence of a resolution passed by the Legislature, directing the commission to prepare a report on highway grade crossings.

ELECTIONS AND APPOINTMENTS.

Atchison, Topeka & Santa Fe.—Mr. P. J. Flynn has been appointed General Agent for Utah, with office at Salt Lake.

Buffalo, New York & Philadelphia.—Mr. Oliver Watson is appointed General Manager of this company, with his office in Buffalo, N. Y. Mr. Watson has been with the company for several years, and for some time past has been Assistant to the President.

Chicago, Rock Island & Pacific.—Mr. C. H. Holdridge has been appointed General Northeastern Passenger Agent, with office in Detroit, Mich., in place of G. F. Lee, resigned.

Cincinnati & Eastern.—At the annual meeting in Cincinnati, July 2, the following directors were chosen: F. N.

Baldwin, A. H. Bugher, L. D. Drake, J. D. Ellison, Stephen Feike, Lewis Glenn, O. H. Hardin, M. Jameson, Henry Lewis, W. R. McGill, W. A. Proctor, Patrick E. Roach, J. H. Rhodes, E. Y. Roots, E. W. Woodward. The board elected W. R. McGill President; Wm. Mansfield, Secretary.

Cincinnati, New Orleans & Texas Pacific.—Mr. Richard Carroll, for some time past Superintendent of the Cincinnati Southern Division, has been promoted to the position of General Superintendent of all the lines controlled by the Cincinnati, New Orleans & Texas Pacific, which are the Cincinnati Southern, the Alabama Great Southern, the Vicksburg & Meridian, the Vicksburg, Shreveport & Pacific, and the New Orleans & Northeastern.

Cleveland, Indiana & St. Louis.—At the annual meeting in Lebanon, Ind., last week, the following directors were chosen: Eli P. Baker, Samuel L. Carson, Daniel S. Heath, W. L. Higgins, James F. Horney, James Jacobs, Enos T. Lane, Eli Marvin, Jesse P. Marvin, James H. Rice, W. A. Thomas, A. Wysong. The board elected Eli Marvin, President; James H. Rice, Vice-President; Jesse P. Marvin, Secretary; W. L. Higgins, Treasurer; C. S. Wisner, Attorney.

Columbia & Southern.—The officers of this new company are: President, Charles B. Peck, Detroit, Mich.; Vice-President, M. R. Baldwin, Minneapolis, Minn.; Secretary, J. R. James, Columbia, Dak.; Treasurer, C. R. Hannon, Columbia, Dak.

Danville, Toledo, Cincinnati & St. Louis.—The directors of this new company are: James A. Cunningham, P. Howard, Charles A. Leggett, Isaac Porter, Benjamin Weaver, A. S. Williams. Office in Danville, Illinois.

Denver & Rio Grande.—Mr. Matt Johnson has been appointed General Agent in Chicago for the freight department.

Frankfort & State Line.—This company has elected officers as follows: President and Treasurer, James H. Rice, Indianapolis, Ind.; Vice-President, A. A. Thomas, Dayton, O.; Secretary, W. J. Craig, Toledo, Ohio.

Lake Erie & Western.—General Manager E. H. Waldron having resigned, the office will not be filled. Its duties will be divided between First Vice-President J. H. Cheney and General Superintendent D. S. Hill.

Lebanon Springs.—The Court having appointed Mr. Wm. N. Reynolds Receiver of this road, he has issued the following circular from his office in Albany, N. Y., dated June 28:

"Under an appointment of the Supreme Court of the state of New York, I have this day entered upon my duties as Receiver of the above road in place of J. W. Van Valkenburgh, resigned. Wm. C. Van Alstyne, Manager; Joseph Child, General Freight Agent, and E. A. Jaques, General Passenger Agent, will continue to act in their respective capacities as heretofore, and until further notice. Any and all communications intended for the Receiver or other officers should be addressed to him at No. 59 North Pearl street, Albany, N. Y."

Louisville & Nashville.—Captain Lee Howell is appointed Superintendent St. Louis Division, vice Mr. James Montgomery, resigned. Captain Howell assumes these duties in addition to those of General Freight Agent St. Louis and Henderson divisions. Mr. C. O. Parker is appointed Assistant Superintendent St. Louis Division. These appointments took effect July 1.

Middletown, Unionville & Water Gap.—This company has elected the following officers: President, H. P. Talmage; Vice President, G. A. Hobart; Secretary, J. P. Rafferty; Treasurer, C. V. Ware. The road is leased to the New York, Susquehanna & Western.

Milwaukee, Lake Shore & Western.—Mr. A. F. Graham is appointed Commercial Agent, with headquarters at the general offices, corner East Water and Mason streets, Milwaukee, taking effect June 25.

Missouri Pacific.—Mr. J. M. Eddy, for two years past Superintendent of the Missouri, Kansas & Texas Division, has been appointed Superintendent of the Texas & Pacific Division, with office at Dallas, Tex.

The Missouri, Kansas & Texas Division has been divided, Mr. D. W. Perry (late General Road Master) being appointed Superintendent of all that part of the division north of Muskogee, Ind. Ter., and Mr. T. G. Golden, Superintendent of the lines south of Muskogee.

Mr. C. L. Dunham having resigned his position as Superintendent of the Atchison Section and Nebraska Extension of the Missouri Pacific Railway, the jurisdiction of Mr. W. W. Fagan is extended to include that portion of the road. His headquarters will remain at Atchison for the present. Resignation and appointment to take effect July 1, 1883.

New York & Long Branch.—Mr. H. H. Nieman has been appointed Superintendent in place of James F. Randolph, resigned.

Ohio & Mississippi.—At a meeting of the board in Cincinnati, June 30, Messrs. Orland Smith, of Cincinnati, and Edward Higgins, Jr., of Baltimore, were chosen directors in place of Osman Latrobe, resigned, and John Waddle, deceased.

Peoples' Railroad Co., of America.—This company has been organized at Indianapolis with the following directors: C. E. Sweeney, of California; David Parsons, of Michigan; Emi Kennedy, J. H. Rice, J. O. Shoemaker, of Indiana; G. A. Boughton, of Illinois; R. J. Breckenridge, W. B. Hakes, B. F. Nelson, of Kentucky; Jacob Roberts, of Pennsylvania; C. M. Schroeder and Henry Traphagen, of New Jersey; W. F. Sander, of Massachusetts. The board elected Emi Kennedy President; J. H. Stewart, Treasurer; H. L. Boone, J. Baird, W. J. Ellston, D. H. Parple, Engineers.

Philadelphia & Reading.—The general passenger office of the Central Railroad of New Jersey has been removed to Philadelphia, and consolidated with the main office there. Mr. H. P. Baldwin, formerly General Passenger Agent of the Central, has been appointed General Eastern Passenger Agent, his office remaining at No. 111 Liberty street, New York.

Philadelphia, Reading & Pottsville Telegraph Co.—At the annual meeting, July 3, the following were chosen: President, Franklin B. Gowen; Directors, E. C. Knight, Henry Lewis, J. A. Lippincott, G. A. Nichols; Secretary, Howard Hancock; Treasurer, John Welch.

Pittsburgh & Western.—Mr. E. K. Hyndman having resigned his position as General Manager, the office is abolished. Mr. W. C. Mobley is appointed Superintendent, and officers of the transportation, road and machinery departments will report to him. The offices of General Passenger and General Freight Agent have been consolidated, and Mr. J. L. Kirk is appointed General Freight and Passenger Agent.

Pullman's Palace Car Co..—Mr. M. B. Kinney has been appointed Acting Assistant Superintendent, with office at the West Side Union Depot in Chicago, in place of Jesse Meehan, transferred to San Francisco.

Richmond & Alleghany.—Mr. L. P. Ecker has been appointed Auditor of this company.

Salina, Lincoln & Fremont.—This new company has elected the following officers: President, W. H. Dickinson, Wahoo, Neb.; First Vice-President, S. C. Smith, Beatrice, Neb.; Second Vice-President, O. P. Hamilton, Salina, Kan.; Secretary, C. T. Boggs, Lincoln, Neb.; Treasurer, N. C. Brock, Lincoln, Nebraska.

Shore Line.—At the annual meeting in New Haven, Conn., June 28, the following officers were chosen: President, S. B. Chittenden; Vice-President, E. H. Trowbridge; Directors, Wm. F. Bartlett, Wilbur F. Day, Henry L. Hotchkiss, Charles G. Landon, Arthur D. Osborne; Treasurer and Transfer Agent, Wilbur F. Day. The road is leased to the New York, New Haven & Hartford.

Texas & St. Louis.—Mr. A. S. Horner has been appointed Superintendent of this company's lines in Texas, with office in Texarkana. He was recently on the Denver & Rio Grande.

Toledo & Indianapolis.—Mr. G. P. Merrill is General Freight and Passenger Agent of this road, with office in Toledo, Ohio.

Traders' Dispatch.—Mr. D. F. Danforth has been appointed agent at Kansas City, Mo., for this fast freight line.

Wabash, St. Louis & Pacific.—Mr. Robert Andrews is continued as General Superintendent, with office in St. Louis. The following appointments are made for the four divisions into which the road has been divided: Eastern Division—Superintendent, George W. Stevens, Peru, Ind.; Assistant Superintendents, B. F. Matthias, Rantoul, Ill., and D. G. Moore, Cairo, Ill. Middle Division—Superintendent, H. F. Clark, Springfield, Ill.; Assistant Superintendents, F. T. Tompkins, Forrest, Ill., and F. D. Schemhorn, Quincy, Ill. Northern Division—Superintendent, E. N. Armstrong, Peoria, Ill.; Assistant Superintendent, E. B. Hyde, Havana, Ill. Western Division—Superintendent, R. S. Miner, Moberly, Mo.; Assistant Superintendent, E. Dresser, St. Louis, Mo. Most of these are reappointments.

Winchester & Strasburg.—At the annual meeting, July 3, the following were chosen: President, Robert Garrett; Directors, John Gregg, George A. Hupp, J. A. Shepard, Hugh Sisson, Thomas Whitridge; Secretary and Treasurer, W. H. Ijams. The road is leased to the Baltimore & Ohio.

PERSONAL.

—Mr. J. B. Clarke has resigned his position as Superintendent of the Toledo & Indianapolis Railroad.

—Mr. Wm. H. Vanderbilt has added \$100,000 to his previous gifts to Vanderbilt University at Nashville, Tenn., which was largely endowed by his father.

—Mr. T. B. Blackstone, President of the Chicago & Alton Railroad Company, has sailed for Europe, to be absent about three months, leaving Vice-President J. C. McMullin in charge.

—It is again reported that Mr. A. J. Cassatt, late Vice-President of the Pennsylvania Railroad Co., has been offered the position of President of the Denver & Rio Grande Co., and that he has the offer under consideration.

—Mr. Henry Yonge died at the residence of his son in Brooklyn, N. Y., July 1, aged 78 years. He was for many years a prominent merchant of Savannah, and since 1870 has been Purchasing Agent of the Central Railroad, of Georgia.

—Mr. D. W. Parker, long Superintendent of the Iowa Division of the Illinois Central road, died in San Jose, Cal., July 2. Mr. Parker had been in failing health for some time, and several months ago he was given leave of absence and went to California.

—Mr. C. P. Mason has resigned his position as Purchasing Agent of the Virginia & Truckee road to accept the Utah agency of the machinery firm of Parke & Lacy. Before leaving his old home in Carson City, Nev., Mr. Mason's friends presented him with a valuable silver set.

—Mr. E. H. Waldron has resigned his position as General Manager of the Lake Erie & Western road. Mr. Waldron has been with that road for eight years past; before going to it he was a short time on the Ohio & Mississippi, having been previously Superintendent of the Cincinnati, LaFayette & Chicago road.

—Mr. Enoch Pratt, for many years a director of the Philadelphia, Wilmington & Baltimore Co., has presented to the city of Baltimore \$833,333 to be invested in city bonds, the interest of which is to be applied to the support and increase of the Pratt Free Library, for which he has already given a handsome building.

—Mr. Chas. M. Mileham, for ten years employed in the car shops of the Chicago, Burlington & Quincy Railroad, has been engaged as Superintendent of the freight car department of the bridge and car works of Wells, French & Co. in Chicago. Mr. Mileham is said to have been chosen because of the good impression made by his intelligence and faithfulness to his employer's interests when sent to inspect a lot of cars built by Wells, French & Co.

—Mr. Everett A. Stevens, the new member of the Massachusetts Railroad Commission, is a locomotive engineer, and has been for some time past running on the Fitchburg road. He is President of the Massachusetts Railroad Employes' Association and a prominent member of the Brotherhood of Locomotive Engineers. He is appointed for the full term of three years. It is said that the Governor promised to appoint any one whom the Employes' Association might name.

—Late English engineering papers contain announcements of the death of Mr. J. E. McConnell, who died June 11. His name is inseparably connected with the history of the locomotive. The following account of his life is taken from the *Engineer*:

"Mr. McConnell was born in 1815, and served his apprenticeship to Messrs. Girdwood & Co., of Glasgow, and became there a competent workman. He was subsequently appointed foreman in the shops of Messrs. Bury, Curtis & Co., of Liverpool, where he may be said to have made his first practical acquaintance with the construction of the locomotive. We next find him with Messrs. Vernon & Co., of Liverpool; and he was subsequently manager of a machine shop in Manchester. In 1842, when he was but 27, his railway career began. In that year he was appointed Locomotive Superintendent of the Birmingham & Gloucester Railway, which he held until 1847, when he was made Locomotive Superintendent of the Southern Division of the London & Northwestern Railway, which responsible post he

filled for 15 years—that is to say, up to 1862, when he retired from railway life, and thence up to the time of his death took private practice as a consulting engineer. He was elected an associate of the Institution in March, 1845, and was transferred to the class of member in February, 1851. He was one of the founders of the Institution of Mechanical Engineers.

"Mr. McConnell gave much attention to the introduction of coal as a locomotive fuel, and the peculiar type of double furnace boiler which he designed is well known."

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods are reported as follows:

Six months ending June 30:	1883.	1882.	Inc. or Dec.	P. c.
Denver & Rio Grande.....	\$3,348,600	\$3,112,100	I.	7.6
Mil. Lake Shore & West.....	465,315	407,543	I.	14.2
St. L. & San Francisco.....	1,606,855	1,513,823	I.	6.2
Five months ending May 31:				
Ch. Ind. St. L. & Chi.....	\$408,019	\$399,083	D.	2.3
Norfolk & Western.....	1,005,825	850,116	I.	18.3
Net earnings.....	417,857	331,608	I.	26.0
Pennsylvania.....	20,156,713	18,557,096	I.	8.9
Net earnings.....	7,339,488	6,855,501	I.	7.0
West Jersey.....	309,158	320,322	D.	3.6
Net earnings.....	120,291	129,992	D.	7.5
Month of May:				
New Orleans & N. E.....	\$9,135	\$15,061	I.	64.4
Norfolk & Western.....	25,061	27,558	I.	9.8
Net earnings.....	70,782	77,558	I.	9.2
Pennsylvania.....	4,303,000	4,087,877	I.	5.5
Net earnings.....	1,608,671	1,706,749	D.	5.9
West Jersey.....	92,412	75,493	I.	22.4
Net earnings.....	33,014	39,356	I.	17.8
Month of June:				
Denver & Rio Grande.....	\$39,600	\$53,700	I.	35.6
Mil. Lake Shore & West.....	87,365	69,508	I.	25.7
St. L. & San Francisco.....	259,800	241,200	I.	7.7
Third week in June:				
Ch. & Eastern Illinois.....	\$39,094	\$34,907	I.	11.9
Ch. & Grand Trunk.....	55,386	38,169	I.	45.1

California Passenger Rates.

The California Railroad Commission has adopted a schedule of passenger rates for the railroads in that state which makes reductions ranging from 13 to 35 per cent. in the present fares. The general basis of the commission tariff is a rate of 4 cents per mile, but 5 and 6 cents per mile are allowed for certain roads and sections of roads where there are steep mountain grades, or where the passenger traffic is very light.

Grain Movement.

For the week ending June 23, receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past seven years:

Year.	Northwestern receipts.	Northwestern shipments.	Atlantic receipts.
1877.....	2,029,971	2,627,653	781,921
1878.....	3,851,821	2,624,876	824,773
1879.....	4,208,973	3,747,455	1,876,488
1880.....	5,011,004	6,663,080	2,303,100
1881.....	7,252,434	7,456,759	3,566,702
1882.....	2,582,691	3,556,794	1,171,451
1883.....	4,276,859	3,922,439	1,184,016

Thus the receipts of the Northwestern markets for the week were nearly 1,700,000 bushels (66 per cent.) more than in the corresponding week of last year, but nearly 4,000,000 bushels less than in 1881, and less than in 1879 and 1880. They were also 1,294,000 bushels (23½ per cent.) less than in the previous week and the smallest for four weeks—much smaller than the average February and March receipts, which is extraordinary for a June week.

The shipments of these markets were 666,000 bushels (20 per cent.) more than in the corresponding week of last year, but 3,534,000 less than in 1881 and 2,740,000 less than in 1880. They were also 1,059,000 bushels (21 per cent.) less than in the previous week of this year, and were the smallest for six weeks. The rail shipments were but a trifle greater than last year, not a third as great as in 1881 (which, however, was the first week of the railroad war, when rail shipments were the largest they have ever been when navigation was open), little more than half as great as in 1880, and a third less than in 1879. They were also a smaller proportion of the total shipments than in any other year since 1877. The shipments down the Mississippi for the week were 159,194 bushels, or 4 per cent. of the whole.

The receipts at Atlantic ports for the week were nearly 900,000 bushels (34 per cent.) more than last year, but 2,235,000 less than in 1881, and 6,848,000 more than in 1880, when they were the largest ever known, and less, also, than in 1878 and 1879. They were, however, but 24,000 bushels less than the week before this year, and the smallest for five weeks.

With a total decrease from the previous week of 1,296,000 bushels in Northwestern receipts, Chicago has a decrease of 1,093,000 bushels and Peoria a decrease of 109,000. Chicago, however, did not have an unusually small proportion of the receipts (58½ per cent.), but it had previously had an unusually large one. Its receipts were still larger than in any week from the middle of March till the end of May, while the St. Louis receipts were much smaller than in any week in May except the first, and the Peoria receipts were the smallest since the first week of August last year.

The falling off in receipts would naturally be attributed to the falling prices of wheat and oats; but nearly half of it is in corn, in which there has been not considerable change in prices, and very little of it is in wheat.

In Atlantic receipts there is a decrease, compared with the previous week, of 115,000 bushels at New Orleans, of 185,000 at Baltimore and of 91,000 at Boston, while at New York the increase is of 336,000. New York's proportion was 66 per cent., which is unusually large, and its receipts, with one exception, were the largest of the year; Baltimore's, with two exceptions, were the smallest of the year, and but one-half its average this year; Philadelphia's were the smallest of the year, and Boston's the smallest with two exceptions, about one-third below its average, while New York's were 75 per cent. above its average. There is probably no particular significance in this, however.

The exports from Atlantic ports for the week to June 23 for five years has been:

Year.	Flour, bbls.	Grain, bu.	Total, bu.
1883.....	97,239	1,888,875	2,326,450
1882.....	65,265	888,384	1,182,076
1881.....	114,648	4,651,614	5,167,530
1880.....	104,192	7,122,553	7,609,417
1879.....	125,080	4,405,291	4,968,151

Thus the exports this year, though 856,000 bushels more than last year, were 2,441,000 less than in 1881 and no less than 5,283,000 (70 per cent.) less than in 1880.

Buffalo grain receipts by lake, from the opening to June 30, were as follows, flour in barrels and grain in bushels, flour being reduced to grain in the totals:

Year.	Flour, bbls.	Grain, bu.	Total, bu.
1883.....	579,844	552,851	26,993
1882.....	18,807,014	15,439,203	3,427,811
1881.....	18,807,014	15,439,203	3,427,811
1880.....	18,807,014	15,439,203	3,427,811
1879.....	18,807,014	15,439,203	3,427,811

For the same period shipments eastward of grain received by lake were as follows, in bushels:

Year.	1883.	1882.	Inc. or Dec.	P. c.
By canal.....	12,490,825	9,128,907	I.	36.8
By rail.....	4,141,476	3,633,870	I.	14.0
Total.....	16,632,301	12,762,777	I.	30.3
Per cent. by rail.....	24.9	28.5	D.	3.6

The canal opened May 7 this year, and April 20 last year, giving 44 days of navigation this year against 71 last year. The number of boats cleared from Buffalo by the Erie Canal to June 30 was 1,925, an average of 44 a day this year, against 2,057, or an average of 29 per day last year.

Coal.

Coal tonnages for the week ending June 23 are reported as follows:

Year.	1883.	1882.	Inc. or Dec.	P. c.
Anthracite.....	780,391	707,537	I.	10.3
Semi-bituminous.....	117,767	78,496	I.	50.0
Bituminous.....	50,297	66,982	D.	24.9
Coke, Penna.....	58,461	45,977	I.	27.1

The anthracite market is a little more active. The companies have decided to make a small advance in list prices for July, but the actual selling prices have not been at all affected by this action.

An attempt is to be made to restrict the production of coke by agreement, with the hope of increasing prices, which are now very low.

The coal tonnage of the Pennsylvania Railroad for the week ending June 23 was:

Year.	Coal.	Coke.	Total.
Line of road.....	119,593	49,857	169,450
From other roads.....	54,586	8,604	63,190
Total.....	174,179	58,461	232,640

The total tonnage this year to June 23 was 5,635,116 tons, against 5,340,723 tons at the same time last year, showing an increase of 294,393 tons, or 5.5 per cent.

Cumberland coal shipments for the week ending June 23 were 52,233 tons. The total shipments this year to June 23 were 1,047,807 tons.

Cumberland coal shipments for the six months ending June 30 are reported by the Cumberland *Civilian* as follows:

Year.	Shipments from mines.	Tons.
Cumberland & Pennsylvania R. R.....	335,046	334,134
George's Creek & Cumberland R. R.....	230,941	230,941
West Virginia Central & Pittsburgh.....	139,256	139,256
Direct from mines to Baltimore & Ohio.....	1,709	1,709
Total.....	1,095,837	1,095,837

Shipments out of region:

Year.	Baltimore & Ohio R. R.	Tons.
Bedford Div. Pennsylvania R. R.....	637,556	637,556
Chesapeake & Ohio Canal.....	254,132	254,132
Total.....	1,095,837	1,095,837

Local shipments are included in the Baltimore & Ohio tonnage reported above.

The anthracite coal tonnage of the Belvidere Division, Pennsylvania Railroad, for the six months ending June 30, was:

Year.	1883.	1882.	Inc. or Dec.	P. c.
Coal port for shipment.....	45,843	32,575	I.	41.7
S. Amboy.....	335,046	334,134	D.	0.08
Local points on N. J. div.....	385,734	349,111	I.	16.5
Co.'s use on N. J. div.....	72,992	63,792	I.	14.4
Total.....	859,705	809,612	I.	6.2

Of the total this year 693,242 tons were from the Lehigh Region, and 166,463 tons from the Wyoming Region.

The arbitrators to whom was referred the question of wages to be paid in the Pittsburgh coal region have offered as a compromise a rate of 3½ cents a bushel. The coal operators offered 3 cents, and the miners demanded 3½ cents.

Steamboat Traffic on the Red River of the North.

Navigation on the Red River of the North is carried on more extensively and cuts a greater figure in the commercial interests of the Northwest than is realized or supposed by many.

The impression that many throughout the East receive that the Red River only serves to irrigate and drain the country through which it flows is quite erroneous, and they would be surprised were they to witness the activity and enterprise in the yards at this point, which is the centre of river traffic this side of the Canadian line. The grain and general merchandise, lumber, etc., transported by the Alton and Grandin lines of steamers during the past few years the navigation has been encouraged is astonishing, and the tonnage figures would surprise the tenderfoot who lives in a country where rivers of twice the width of the Red are hardly navigable by a skiff.

An *Argus* reporter yesterday visited the offices of the steamboat lines, and was given a few facts that may be of interest to the reader. The Alton line has its headquarters north of the Northern Pacific Railroad bridge on the Minnesota side, with a warehouse on the Dakota bank. The line is owned by the Alton brothers, C. R. and H. W., who manage it and give the business their personal attention. They own two large steamboats; the "H. W. Alton," having a registered tonnage of 110 tons is the largest of the two. She is stern wheel, 180 ft. long, length of beam over all of 28 ft., has a 5 ft. depth of hold, has two engines with a 12 in. cylinder and length of stroke 6 ft. The boat is named after one of the owners and was built last year at a cost of several thousand dollars. The "Pluck," smaller boat, is 86 tons burden, has side wheels, is 95 ft. in length, has a beam over all of 30 ft., two engines having 9 in. cylinders and length of stroke 5 ft.; this boat was rebuilt two years ago.

There are also eight barges owned by this line, the "Jessie," 170 tons; "Aimee," 116 tons; "Harry," 178 tons; "Ernest," 116 tons; "Fred," 178 tons; "Femina," 155 tons; "Moorhead," 71 tons; and "Fargo," 71 tons. The boats run down the river as far as Emerson and up to Fort Abercrombie. About 40 men are employed on the line from the fifteenth of April to the first of November each year. C. R. Alton commands the "H. W. Alton" and J. A. Kent the "Pluck." The freight business of this line consists principally of general merchandise and lumber.

The Grandin line is the oldest of the two steamboat lines now existing; it is owned and operated by J. L. & E. B. Grandin, with D. B. Shotwell as agent at this point. The company owns one steamboat, stern wheel, of 300 tons burden; this boat was built in 1878 at a cost of \$14,000, and was fitted up for operation for the sum of \$3,000, which makes the value of the boat \$17,000. She is the largest vessel on the river this side of the Canadian line, and has good accommodations for the transportation of passengers. There are six barges, four of 300 tons, one 100 tons and one 150 tons; these barges cost an average of \$3,000 apiece, making the value \$18,000. The company employs 36 men about seven months in the year, and the boats go as far down the river as the line and make this point the head of navigation up. Captain Thimmes, the oldest captain on the river, commands the "Grandin." The freight business is general merchandise and lumber down and grain up the river. The amount of grain transported by this line is im-

mense. A new barge of 300 tons burden will be launched this week.—*Fargo (Dak.) Argus*, June 17.

Petroleum.

The production of the Pennsylvania and New York oil districts for May is given as follows by Stowell's *Petroleum Reporter*, in barrels of 42 gallons:

Year.	1883.	1882.	Inc. or Dec.	P. c.
Production.....	1,962,052	2,480,572	D.	21.1
Shipments.....	1,905,634	1,827,356	I.	4.3
Stock, May 31.....	35,735,824	29,206,987	I.	22.4
Producing wells.....	17,100	19,350	D.	11.1

The production was the largest since December, but was exceeded in eleven months of last year and eleven months of 1881. Of the total production the Allegheny District in New York contributed 15.8 per cent.; the Bradford District in Pennsylvania, 60.0 per cent.; the Warren District, 12.6 per cent.; and the lower districts, 11.6 per cent.

The shipments were the largest since August last, and were exceeded in only four months of last year. The shipments exceeded the production as in April, but not for many months previously. Of the total shipments from the wells, 467,140 barrels, or 23.4 per cent., are reported by rail, and 1,528,494 barrels, or 76.6 per cent., by pipe line.

The stock reported is all in the pipe lines; it was reduced 33,582 barrels during the month.

The number of producing wells reported is the smallest since August, 1881. It has been gradually diminishing since last September. There were 231 new wells completed in May and 18 dry holes reported; 216 new wells were in progress May 31.

Shipments out of the region in May were as follows:

Year.	Barrels.	Per cent. of totals.
New York.....	897,503	45.0
Philadelphia.....	120,417	6.0
Baltimore.....	60,067	3.0
Cleveland.....	482,024	24.2
Pittsburgh.....	56,024	2.8
Local points.....	173,960	8.7
Refined at Creek refineries.....	205,639	10.3
Total.....	1,995,634	100.0

Shipments of oil refined at Creek refineries (reduced to its equivalent in crude) were: To New York, 83,929 barrels; Philadelphia, 13,333; Baltimore, 45,281; Boston, 11,946; local points, 51,150; total, 205,639 barrels.

The *Reporter* says of the month: "The daily average production for the month of May has been increased 1,741 barrels. This increase has all come from the Middle District, which includes Warren and Forest counties. The output from the Cooper tract and from Baltown in Forest County has been increased during the month, notwithstanding a large number of dry holes have been developed."

"The production in the Allegheny and Bradford fields continues to decline, and the same may be said of the lower districts."

"From the outlook now we think the production may be kept up to its present limit during the months of June and July. For the month of August we look for a decided decline in the now known producing fields."

Colorado Traffic Association.

At a meeting in Chicago, June 28, it was agreed to admit the Illinois Central and the St. Paul & Omaha, which had already been admitted into the Omaha pool. The general freight agents of these roads are to agree upon their percentage, and if they are unable to before July 15, the matter will be referred to George M. Bogue, Arbitrator.

It was determined that Utah traffic should be taken from the Omaha pool and transferred to the Colorado Association, as the completion of the Denver & Rio Grande line to Utah gives a route thence not passing through Omaha, but by way of Denver, where this Association divides the traffic. This took effect July 1.

A committee consisting of Marvin Hughitt, R. R. Cable and J. C. McMullin was appointed to endeavor to secure a division of the rates on California through freight, which will give the lines between Chicago and the Missouri River a larger proportion.

Lake Superior Iron Ore.

Shipments of iron ore from the Lake Superior region, up to June 27, are reported as follows by the *Marquette Mining Journal*, in tons:

Year.	1883.	1882.	Decrease.	P. c.
From L'Anse.....	12,521	13,308	787	6.0
From Marquette.....	110,927	292,027	175,100	59.9
From Escanaba.....	362,723	325,748	136,025	31.0
From St. Ignace.....	7,499	7,499	0	100.0
Total.....	492,171	838,582	346,411	41.3

No shipments from St. Ignace have been reported yet this season. Of the Escanaba shipments 92,112 tons were from the Marquette District and 270,611 tons from the Menominee District.

The pig iron shipments up to June 27 were 699 tons, all from Marquette.

The heavy falling off in ore shipments this year is easily explained by the present condition of the iron trade.

Baggage Regulations.

The following circular has been issued by Mr. Sol. Hass, Traffic Manager of the Associated Railways of Virginia and the Carolinas, under date of June 25, addressed to agents, conductors and baggage-masters:

"Commencing Aug. 1, 1883, no piece of baggage weighing more than 250 pounds will be accepted for transportation as baggage, nor will it be transported in baggage cars. Cards giving notice of this rule will be sent to agents to be posted in conspicuous places at their stations, and it will be well to have them posted also at hotels."

"On and after Aug. 1, 1883, you will therefore refuse to check any piece of baggage weighing over the specified amount, and should passengers lay stress on the fact that a passenger is legally entitled to have his baggage carried, say to them that if they will divide their baggage so as to bring each separate piece within the specified weight, it will be checked; otherwise, refer them to the Express Co., or to the freight agent."

"All weight in excess of 150 pounds to be charged for at excess-baggage rate, as heretofore."

Chicago-Utah Fast Freight Line.

The California, Colorado and Utah fast freight line over the Chicago, Burlington & Quincy announces a regular schedule for freight between Chicago and the Missouri River, 490 miles, in 30 hours.

Chicago-St. Louis Rates and Rail Freight.

Considerable shipments of freight are made from the East to St. Louis, to Chicago by lake and thence to St. Louis. There had been no agreement as to the rates from Chicago and they were much demoralized. June 25 it was agreed that beginning July 10 the railroads should charge 20, 15, 18, 10 and 8 cents per 100 lbs. for the five classes respectively, the local Chicago-St. Louis rates being 40, 30, 15 and 12½. The through rail rate to St. Louis is 16 per cent. more than to Chicago, which makes the difference in rates 12, 9½, 8, 5½ and 4 cents for the different classes,

and so to get any advantage from the lake and rail route the shipper must have less than the local rate. On through rail shipments from New York to St. Louis via Chicago the Chicago-St. Louis line gets but about 18 cents for the first class and 6 cents on the fifth.

June Arrivals at the Port of New York.

The following numbers of vessels from foreign and domestic ports are reported by the boarding officer for the month of June for seven successive years:

	1877.	1878.	1879.	1880.	1881.	1882.	1883.
Foreign.....	582	707	764	853	766	784	633
Domestic.....	1,414	1,134	1,211	1,139	865	1,111	1,032
Total.....	1,996	1,841	1,975	1,992	1,631	1,895	1,665

Thus the arrivals this year are the smallest, with one exception, for seven years, and 16½ per cent. less than in 1877. We may not hastily conclude from this, however, that the commerce of New York is falling off. The exports were unusually small last month. The falling off in vessel from foreign ports, compared with last year, was chiefly in bark—small vessels—of which 138 arrived against 254 last year. In steamers the decrease was from 185 to 169, and these probably carried by far the larger part of the exports and nearly all the imports. Of the arrivals from domestic ports 714 were from Eastern and 318 from Southern ports, but only 21 steamers came from Eastern ports, while 93 were from Southern ports. The steamer arrivals from domestic ports have not varied greatly in different years—from 103 in 1879 to 125 in 1882, and averaging 112. The fact that there has been a large decrease in sailing vessels coming from domestic ports, while there has been little or no increase in the steamer arrivals, indicates that the coastwise traffic is going more and more to the railroads. The chief items of this traffic to New York are lumber from Maine, the various freights (manufactures, etc.) from other New England towns, and from the South, cotton and yellow pine lumber. From New York coal, flour, corn and Northern manufactures to the South, and imported goods north and south. The steamers from the South come from Galveston, New Orleans, Savannah, Charleston, Wilmington, Richmond, Norfolk and Baltimore, from the East from almost every port as far as Boston, and from some beyond.

South Carolina Railroad Rates.

The South Carolina Railroad Commission has adopted schedules of passenger and freight rates for all the railroads in the state, based, apparently, upon the rates adopted by the Georgia Commission. It is claimed that the Commission rates will result in a reduction of from 35 to 55 per cent. in the earnings of local traffic of most of the roads. A conference of officers was to be held in Columbia, July 6, to consider what course the roads should pursue.

OLD AND NEW ROADS.

Atlantic & North Carolina.—At a special meeting held at Morehead, N. C., June 28, propositions for the lease of the road were received from the Cape Fear & Yadkin Valley Co.; from a syndicate of Newbern merchants organized as the Eastern North Carolina Co., and from a corporation calling itself the Pamlico & Neuse Railroad Co., of which but little seems to be known. The meeting adjourned without taking final action.

Baltimore & Ohio.—The Chief Engineer has been busy examining the many bids made by contractors for the work on the new Philadelphia Branch. Contracts have been awarded for 60 miles in short sections.

Boston & Maine.—This company's repair shops at Prison Point in Charlestown, Mass., caught fire very early on the morning of July 1, and the machine shop and erecting shop were destroyed, the tools and eight locomotives being destroyed or very badly damaged. The roundhouse was saved, although somewhat damaged. The loss is estimated at about \$75,000.

Canada Southern.—The Niagara Falls Gazette says of the progress of the work on this company's new bridge over the Niagara River: "The work of laying the foundation for the abutment of the new bridge was completed on the American side of the river a few days ago. The excavation has been filled with some 10 or 15 ft. of concrete, which presents a surface as smooth as glass and as solid as the rock itself. Tuesday afternoon was the time appointed for the lowering of the first stone which was to help form the immense abutments. At a given signal the long arm of the derrick on the top of the false work swung around and a stone weighing 1½ tons hung suspended in mid-air. The brakes were loosened and the stone allowed to descend some 40 ft. as rapidly as the rope could be run out, when the brake was tightened, bringing the heavy weight to a standstill, and although it made every timber of the false work tremble as if struck by a tremendous force, the experiment proved most successful. The abutment when finished will be 20 by 40 ft. high. The severe test given to the false work has proven that it is equal to any emergency. These stones, which are at present scattered along the top of the bank, are lowered about 30 ft. to a car on the false work, then pushed to the outer edge, where a derrick worked by steam lowers them to the bottom. As the stones are very large the piers will grow rapidly when once started."

Chicago & Alton.—A majority of the stockholders of both companies have assented in writing to the consolidation of the St. Louis, Jacksonville & Chicago Co. with this company. As heretofore noted, the St. Louis, Jacksonville & Chicago road is operated by the Chicago & Alton under a perpetual lease, and the change made by the consolidation will consist chiefly in the substitution of Chicago & Alton stock for the shares of the leased road.

Columbia & Southern.—This company has been organized to build a railroad from Columbia, Dak., to Sioux Falls, about 170 miles. Surveys for the road have been begun.

Columbus & Western.—This road (which is controlled by the Central of Georgia) is to be extended from its present terminus at Goodwater, Ala., northwest. Contracts will shortly be let for a section of 15 miles, from Goodwater to the crossing of the Anniston & Atlantic road, now under construction.

Danville, Toledo, Cincinnati & St. Louis.—This company has been organized to build a railroad from Danville, Ill., to Eugene, Ind., to connect with the Toledo, Cincinnati & St. Louis road. The distance is about 15 miles.

Delaware & Hudson Canal Co.—Notice is given that the bonds of this company falling due July 1, 1884, will be redeemed on their presentation at the company's office in New York and assignment to the company. By the last report there were \$3,385,000 of these bonds outstanding; the funds for their redemption have been provided by the issue of new stock.

Fitchburg.—The work of double-tracking the Vermont & Massachusetts Division is steadily progressing. The second track has been completed between Royalston and Pequoig, and there is now a double track to Orange, 35 miles from Boston. The second track has been completed 2 miles east of Miller's Falls and also from Miller's Falls to Montague, some 4 miles. The work of extending the second track is very difficult, necessitating the blasting of ledges, filling up valleys and replacing the present single track bridges with wider ones, but it is being pushed forward as rapidly as possible, though it is doubtful if the remaining 14 or 15 miles to be built will be finished this season.

Georgia Railroad Commission.—The order of the Georgia Commission requiring the railroads to furnish increased facilities for freight is as follows:

"1. It is hereby ordered that each railroad company in this state at each and every freight station shall provide, on or before the first day of September next, ample and suitable depot or shed-room for the reception and protection from theft or damage by weather of all cotton or other articles of merchandise that may be offered them for immediate shipment over their respective roads.

"2. Where depot room is not now sufficient to meet this requirement, cheaply constructed wooden sheds may be supplemented to fully protect the cotton or other merchandise stored from dampness by contact with the ground, sides or overhead.

"3. Railroads are not required to receive cotton or other merchandise and warehouse the same unless the articles offered are in good shipping condition, well prepared by proper packing and intelligent, plain marking, and accompanied with orders for immediate shipment."

Grand Trunk.—A dispatch from Chicago, July 3, says: "Since the Michigan Central Railroad withdrew its through trains from the Great Western Division of the Grand Trunk and began to run them over the Canada Southern road, on an accelerated time table, the Grand Trunk has been negotiating for a Chicago connection. A few days ago contracts to that end were made with the Baltimore & Ohio and Wabash roads, and to-day a meeting of the representatives of these roads was held here to perfect the details.

"Arrangements were completed by which through trains will be run in connection with these roads to Detroit and Niagara Falls, and through sleepers to New York and other seaboard cities over the connecting lines. The arrangement goes into effect July 15, with two trains daily running on the Michigan Central schedule time for the present. It is claimed that the intention is soon to shorten the time about an hour, which can be done easily, as the route is considerably shorter than the Michigan Central. The officers of the road say that they will have the active assistance of the Baltimore & Ohio and the Wabash and its Western connections, in connection with all of which through tickets are being printed, and they propose to make a sharp competition with the Michigan Central."

Gulf, Colorado & Santa Fe.—It is said that the main line of this road will soon be extended from Lampasas, Tex., to Brownwood, in Brown County.

Kansas City, Fort Scott & Gulf.—On this company's extension to Memphis, the Kansas City, Springfield & Memphis line, the gap between the late terminus at Augusta, Mo., and the Iron Mountain crossing at Hoxie has been closed. Track has also been laid from Hoxie southwest 68 miles (25 miles of this was laid last year to Jonesboro), leaving only 17 miles of track to be laid to reach the Mississippi opposite Memphis. Much of this remaining section is heavy work, including several miles of piling, but a large force is employed, and the road will be completed by Sept. 1. The present end of the track is 25½ miles from Springfield, Mo., and 459 miles from Kansas City.

Kansas Diagonal.—This company has been organized to build a railroad from the Missouri River at Nebraska City, Neb., by the way of Clay Center, Abilene and McPherson to Wichita, Kan., about 250 miles. The office is at Clay Center, Kan. It is a big project, with not much chance of getting beyond the paper stage.

Kentucky Central.—The new extension to Richmond, Ky., was formally opened on June 28. Trains now run regularly through to Richmond Junction, where connection is made with the Louisville & Nashville's line to Knoxville.

Little Rock & Fort Smith.—This company issued a circular on June 28 to the effect that, in view of the suits brought against the road on account of state aid bonds, it had been thought best to devote the earnings to the reduction of the floating debt of the company. This has been done since Jan. 1 to the extent of \$160,000, and the remaining debt is now about \$112,000. It is proposed to fund the coupons falling due July and January into 7 per cent. 10-year scrip.

The inference from the circular is that the state bond suits have made it impossible for the company to borrow money at reasonable rates to carry the floating debt.

Mexican Central.—The latest time-table of this road shows on the Chihuahua Division two regular freight trains and one passenger train each way over the road. The passenger train makes the run of 224½ miles from Paso del Norte to Chihuahua in 9 hours and 50 minutes.

Mexican Railroad Notes.—The following notes are from the Mexican Financier of recent date:

By July 15 next it is expected to open the line of the National Railroad from Monterey to Saltillo. The telegraph line belonging to the same company has been opened to Saltillo.

Congress has approved of the contract given to General Cravioto, of Huachinango, for constructing a railroad from Apizaco to Huachinango.

An official inspection of the railway from Puebla to Izucar de Matamoros shows the rails to have been laid to kilometre 37 (24 miles). The telegraph line has been completed to Izucar de Matamoros. During April a total of 11,402 passengers was carried over the road.

The inauguration of work on the Eads tramway at Coatzacoalcos was witnessed by General Enrique Mexia, M. Van Brocklin, Carlos J. Moreno and others. Work was begun on left side of the Brazo Mistan River. Over 150 men are now working.

A reformed concession for a line of road from Cameron to Huatusco has been given by which the Government obligates itself to pay a subsidy of \$3,500 a kilometre constructed and approved by the Department of Public Works.

Don Manuel Saavedra has been authorized by Congress to build a railroad from the port of San Benito and the town of Tapachula in Chiapas to connect with the proposed Mexican Southern. Work must begin within one year and completed in four years from the signing of the contract. The usual subvention is attached and this time it is for \$8,000 a kilometre.

Sr. Federico Mendez Rivas, as representative of Sr. C. Policarpo Valenzuela, has received a concession for the construction of a railway, with a telegraph or telephone line, from the city of Cárdenas to the Grijalva River.

The Mexican National Railway has been finished as far

as the city of Acámbaro, 286 kilometres (193 miles) from the city of Mexico.

The Government Inspector of the Morelos Railway has rendered his report of the work done in the month of April, showing material progress on the several sections from Mexico to Ozumba, Ozumba to Cuantlilco, and Cuantlilco to Yautepac. The track from Cuantlilco to Yautepac has been inaugurated since April 1, and the traffic from Mexico to the latter point has been established.

The line of tramway between Matamoros and the custom-house is finished.

The wash-outs on the Mexican Central between Leon and Lagos have been fully repaired, and trains are now running regularly.

The subscription books of the new Mexican Railway of the Central Table Land were opened in the City of Mexico June 11, at the office of the company.

The first locomotive on that section of the Inter-oceanic Railway between Irolo and Pachuca began running June 11, and from that date mule-power will be a thing of the past on the road. The time between Irolo and Pachuca will be shortened fully one-half, it is expected.

There are now 51 actual and projected railways in Mexico. Of these, 4 are finished, 30 are under construction, and 17 are projected. One of these lines belongs to the Federal Government, 10 are without subventions and have not yet been undertaken, and 40 have been granted subventions varying from \$5,000 to \$9,500 to the kilometre. The Mexican Railway to Vera Cruz has an annual subsidy of \$560,000. Four of these railways are operated by animal power, the others by steam.

Michigan Central.—Mr. O. W. Ruggles, General Passenger Agent of this road, has issued a circular announcing that until the completion of the new bridge over the Niagara River at Niagara Falls, which will be about Dec. 1, 1888, the Michigan Central, to accommodate those of its patrons who desire to visit Niagara Falls or go East via the Falls, has placed trains on its Niagara Branch to run in connection with all through trains. This arrangement will remain in effect until the bridge is finished, when all through trains into and out of Buffalo will be run across this bridge, affording passengers a good view of the falls.

Milford, Franklin & Providence.—Track is now laid on this road, and it will be opened for business as soon as the Railroad Commissioners have inspected. It extends from the New York & New England road at the Nason Crossing, in Franklin, Mass., westward to the Milford & Woonsocket road at Bellingham. It is five miles long and has cost about \$100,000. For two years the Milford, Franklin & Providence and the Milford & Woonsocket companies are to furnish the equipment, consisting of several passenger and freight cars and a locomotive, and run trains in connection with the New York & New England, which road will take the cars at Franklin and draw them to Boston. After the expiration of that period it has been agreed to lease the road to the New York & New England railroad for ninety-nine years at a rental based upon the earnings of the road for the current two years.

Mobile & Ohio.—This company has made an agreement to sell to the lumber firm of A. C. Danner & Co., of Mobile and New Orleans, all the unsold pine lands in its land grant in Alabama and Mississippi. The sale will include about 750,000 acres in all, on terms which have not been made public. The purchasers will organize the Tanner Land & Lumber Co., and will build a number of mills at various points on the line.

Montpelier & Wells River.—In the matter of the application of the Central Vermont Co. to compel this company to make connections and exchange business with its lines, the Vermont Supreme Court, on July 2, made a decision, and entered an order requiring the Montpelier & Wells River Co. to haul over its road passengers, baggage and cars received from the Central Vermont, and to take the trains without unnecessary delay. The Central is required to pay local rates on all traffic, and to indemnify the Wells River road against loss on any special trains which it may be compelled to run in compliance with this order. The order takes effect on July 8.

Montreal & Sorel.—By mutual agreement the lease of this road to the Southern Railroad Co., of Canada, has been canceled, and the Montreal & Sorel Co. resume possession of its road on July 4.

New Bonds.—New issues of bonds are offered on the market as follows:

Pennsylvania Railroad 4½ per cent. collateral trust bonds to the amount of \$5,000,000, having 30 years to run, re offered at 97½ by Drexel & Co., of Philadelphia, and rexl, Morgan & Co., of New York.

St. Paul & Northern Pacific 6 per cent. 40-year bonds, guaranteed by the Northern Pacific, to the amount of 5,000,000, are offered at 102 and interest by Drexel & Co., of Philadelphia, Drexel, Morgan & Co., and Winslow, Lanier & Co., of New York.

Tidewater Pipe Line first-mortgage, 6 per cent. 10-year bonds are offered through the First National Bank of New York.

New York, Chicago & St. Louis.—This company's statement accompanying the application to the New York Stock Exchange to list its second-mortgage bonds, contains the following balance sheet, of date March 31.

Common stock.....	\$28,000,000.00
Preferred stock.....	22,000,000.00
First-mortgage bonds.....	15,000,000.00
Car trust certificates.....	4,000,000.00
Floating liabilities.....	3,092,182.53
Total.....	\$72,092,182.53
Road and equipment, general.....	\$64,963,800.14
Car trust equipment, received.....	4,249,504.65
Trustees car trust (to pay for further equipment).....	1,750,495.35
Floating assets.....	1,128,382.39
Total.....	\$72,092,182.53

The floating liabilities have been or are to be funded in the issue of \$10,000,000 second-mortgage bonds since made.

New York City & Northern.—At a conference last week of the committee of bondholders of this road and representatives of the junior securities, the terms of the plan for the re-organization were not finally decided upon. The New York Times reports that the agreement has been prepared, and will probably be executed in a few days, and the road taken out of Receiver Leary's hands. The Times says:

"By the terms of this agreement the control of the road will remain with the holders of the first-mortgage bonds, who will make important improvements and operate the road for the benefit of all concerned. The funded debt of the New York City & Northern consists of nearly \$4,000,000 first-mortgage bonds and \$2,000,000 second-mortgage bonds. The first-mortgage bonds include \$274,000 7 per cent. 30-year bonds, and \$3,685,500 consolidation mortgage 6 per cent. 30-year bonds. The holders of the second-mortgage bonds do not appear in the proposed agreement. A committee of first-mortgage bondholders, of which Henry Villard is chairman, has been considering the matter of

reorganizing the affairs of the company for some time, and the plan now proposed is as follows: The present first mortgage will be increased to \$4,850,000, the additional bonds to be a preferred security bearing 6 per cent. interest from the date of its issue, and the \$4,000,000 to take on the character of an income bond for a certain period, probably not to exceed five years. The past due interest on the \$4,000,000 may be funded into preferred stock at the option of the holder.

"Of the new issue of \$850,000, the agreement provides that the present first-mortgage bondholders shall take two-thirds and the junior securities one-third at par. These new bonds will control the road until it is in condition to take care of all its securities. With the \$850,000 thus raised it is proposed to build an extension of the road from the Van Cortlandt station to Getty's Square, Yonkers, a distance of about 3½ miles. Nearly 1½ miles of this will be an elevated road, passing through the village of Yonkers. Other needed improvements will be made, particularly in the matter of rolling stock. It is expected that if the agreement as it now stands is signed, the work of reorganization will begin within 30 days. The original line of road runs from High Bridge to Brewsters, a distance of 51½ miles, and the West Side & Yonkers Railroad, which is leased and operated by the New York City & Northern, makes the total length of the road a trifle more than 52½ miles. The West Side & Yonkers road extends from the Eighth avenue terminus of the Metropolitan Elevated Railroad to High Bridge."

New York & Long Branch.—At the hearing in Trenton, N. J., July 3, on the application for the Court to appoint a Superintendent for this road, and on the further charge that the road was in poor condition and the bridges unsafe, testimony was presented to the effect that President Little had given special instructions to Consulting Engineer Moore to make a careful examination of all the bridges on the line and to proceed at once to make all repairs which may be necessary. After some argument counsel for the Pennsylvania Railroad Co. withdrew their motion, with leave to renew it, if necessary.

New York, Susquehanna & Western.—This company has been for some time negotiating for changes in the lease of the Middletown, Unionville & Water Gap road, for which it now pays a rental equal to 7 per cent. on the stock and bonds. These negotiations have resulted in the purchase of a large part of the stock of the leased road at 55, the lessee thus securing complete control. An agreement has also been made with the second-mortgage bondholders to reduce their interest from 7 to 5 per cent., in consideration of a full guarantee of the latter amount. Nearly all the holders have agreed to accept these terms and the rest will probably come in.

Norfolk & Western.—This company makes the following statement for May and the five months ending May 31:

	May	Five months—
	1883.	1882.
Earnings.....	\$205,322	\$185,322
Expenses.....	125,901	107,761
Net earnings.....	\$79,792	\$77,558

For the five months there was an increase of \$155,709, or 18.3 per cent., in gross earnings; an increase of \$69,460, or 13.4 per cent., in expenses, and an increase of \$86,249, or 26.0 per cent., in net earnings.

The New River Division was opened for traffic on May 21, its earnings being thus included for one-third of the month.

Northern Pacific.—On the Fargo & Southwestern Branch the rails have been laid for 11 miles westward from the late terminus at Lamoure, Dak., and the end of the track is now 67 miles from Fargo. The road is graded 13 miles further, and tracklaying is in progress.

This company offers, through Drexel, Morgan & Co. and Winslow, Lanier & Co., \$5,000,000 first-mortgage, 6 per cent., 40-year bonds of its leased St. Paul & Northern Pacific, the total issue authorized being \$10,000,000. The leased road now extends from Brainerd, Minn., to Sauk Rapids, 60¼ miles, and an extension from Sauk Rapids to St. Paul, 92 miles, is in progress. The proceeds of the bonds are to be used to complete the extension and provide terminal facilities in St. Paul and Minneapolis. The bonds are guaranteed by the Northern Pacific, and are offered at 102 and interest.

Norwich & Worcester.—At a special meeting held June 28, the stockholders voted to accept the act of the Massachusetts Legislature authorizing the company to buy and hold stock in the Norwich & New York Transportation Co. They also voted to extend the road from its present terminus at Allyn's Point, on the Thames River, southward to Groton at the mouth of the river.

The length of the extension from Allyn's Point to Groton will be about 7 miles. Its estimated cost, including terminal property and a steamboat dock at Groton, is \$450,000. The company is now paying the New London Northern \$40,000 a year for the use of the tracks between Norwich and New London, to make connections with the steamboat line to New York, and it is estimated that a saving will be effected by the building of the extension.

Ohio & Mississippi.—The Cincinnati Commercial Gazette of July 1 says: "The efforts of the Baltimore & Ohio party to secure this road, taking it out of the courts, seems from present indications to be in reasonably close proximity to success; certainly decided efforts in that direction are in progress. It was recently mentioned in the Commercial Gazette that the road would soon be out of the receiver's hands, and that W. W. Peabody, the live, go-ahead and omnipresent Superintendent, would be Superintendent thereof. Yesterday the following Baltimore & Ohio gentlemen arrived in the city and registered at the Grand Hotel: Robert Garrett, Vice-President; T. H. Garrett, James Sloan, Jr., J. Wilcox Brown, Edward Higgins, Jr., W. L. Montague, Frank Key Howard and D. H. Crawford, private secretary to Mr. Garrett."

"Later in the day there was a meeting of the directors of the Ohio & Mississippi Railway, at the Fourth street office of the company, Mr. Garrett presiding. Previous to more important business, vacancies in the directory were filled. Colonel Orland Smith, of Cincinnati, was elected in place of John Waddle, deceased, and Edward Higgins, Jr., of Baltimore, in place of Osman Latrobe, resigned."

"Resolutions were adopted authorizing the immediate execution of the new issue of bonds, and of a mortgage to secure them; the bonds to be applied to liquidating the debts of the road and the arrears of interest."

"Arrangements are in active progress for placing the new bonds on satisfactory terms. The Executive Committee of the board will further and perfect their work through the agency of parties in this country and England, who are largely interested in taking the road out of the courts. The new bonds are to be used, in addition to liquidating the road's indebtedness, in the purchase of equipment to the amount of about half a million dollars."

This plan provides for the issue of \$16,000,000 consolidated bonds, of which about \$13,000,000 will be used to retire outstanding bonds, and the balance to pay off the

floating debt and past due interest. It is understood that Mr. Garrett, while in England, made an agreement by which English bondholders who are in control are to take a large proportion of new bonds at a fixed price, provided American parties take the balance.

Pennsylvania.—Contracts will shortly be let for a new freight station in Pittsburgh. The building will be of brick, 663 by 99 ft., and two stories high. The lower floor will be the freight station proper, one end of the upper story being used for offices, while it is probable that an elevated track will be run into the second floor also.

The company's statement for May shows for that month, as compared with May, 1881, on all lines east of Pittsburgh and Erie:

A gain in gross earnings of.....	\$194,129
An increase in expenses of.....	352,244
Net decrease.....	\$158,115

For the five months ending May 31, as compared with the same period last year, the same lines show:

An increase in net earnings of.....	\$1,638,617
An increase in expenses of.....	954,722
Net increase.....	\$683,895

All lines west of Pittsburgh and Erie for the five months of 1883 show a surplus over all liabilities of \$351,291, being a gain as compared with the same period of 1882 of \$419,608.

The new 4½ per cent. bonds offered last week have all been disposed of, the bids considerably exceeding in amount the \$5,000,000 offered.

The Philadelphia Ledger of June 23 says: "The Pennsylvania Railroad is actively pushing the construction of its Schuylkill Valley lines, and has a large part of the work, especially on the sections nearest Philadelphia, well advanced. The piers for the Manayunk bridge and approaches are steadily rising, while the trestles, both in West Manayunk and on the Germantown & Chestnut Hill road, where it leaves the main line at Germantown Junction, are practically completed. Much of the masonry for bridges, culverts, etc., on both lines is completed or in progress, and, in fact, a large part of the grading of the whole line from Hestonville up the Schuylkill to near Norristown is now ready for the tracks, and on some portions the rails are already laid. The builders are meeting serious legal obstructions at Norristown, however, which, if not removed, will cause a change in the route above Conshohocken. The original intention was to go up the north bank of the Schuylkill from Manayunk to a point below Phoenixville, where the river was crossed to the southern bank, near that town. The new road was to be laid on Lafayette street through Norristown (the next street north of the Reading Railroad). The latter company, however, is doing all it can by legal process to prevent this, and two or three property owners have also joined it in other injunction suits. The rails of the new line are laid, after a fashion, on Lafayette street westward as far as Mill street, in Norristown, and, in their present incomplete condition, legal process has stopped the further prosecution of the work. The builders have consequently suspended operations, not only in Norristown but for a mile eastward, as they contemplate a change of route to avoid the legal obstacles. The Schuylkill below Norristown makes a sweep around a semi-circular curve, and here the Reading Railroad's Norristown Branch is built along the water's edge on the northern bank. The new line is laid out alongside it, but on a higher level, and at Mogee's quarries, a mile below Norristown, it diverges inland toward Lafayette street. The plan now contemplated is to cross the river at these quarries, and, by a much shorter line, go up the southern bank through Bridgeport to Phoenixville. At present work is at a standstill west of Mogee's, but the new route, which thus avoids Norristown, has been laid out, and will be used, in all probability, if the legal obstacles prove too formidable. Elsewhere on the line work steadily progresses, and generally without obstruction, though some difficulties have occurred in Conshohocken, where there have been in consequence some alterations of routes and grades. The line of entrance to Reading has been located and the depot site secured."

Pennsylvania, Ohio & Virginia.—This company, recently incorporated in Virginia, West Virginia and Pennsylvania, has consolidated its three charters. It is the intention to construct a road from Cross Creek, a point on the Pittsburgh, Chartiers & Youghiogheny Railroad, to Wheeling. All the preliminary surveys are expected to be completed by October, and after that time work on the construction of the road will be commenced.

People's Railroad Co., of America.—This stupendous project, which has at present its headquarters in Indianapolis, includes the building of double track narrow gauge lines from New York to San Francisco and from Chicago to New Orleans, with branches wherever anybody wants them. The capital stock it to be \$360,000,000, and to make the project truly popular the par value of the shares has been fixed at \$5. A somewhat indefinite "California capitalist" stands ready to take all the stock not at once taken up by an eager public.

Philadelphia & Reading.—In the United States Circuit Court, in Trenton, N. J., June 30, application was made for an injunction to restrain this company from continuing to operate the Central Railroad of New Jersey, and for an order setting aside the lease of the road. The Court is also asked to appoint a receiver pending the trial of the suit. The complaint alleges that the company has not made compensation to dissenting stockholders as required by law, and that the law of 1880, under which the lease was made, is unconstitutional, and the lease is therefore void. The suit is in the name of Wm. B. Dismore, of New York, a stockholder of the Central, but it is reported to be brought at the instance of the Pennsylvania Railroad Company. The Court granted the usual order to show cause, returnable on July 9, and also a temporary injunction restraining the Philadelphia & Reading Company from collecting the revenue of the Central road until the time set for the hearing.

Argument on this temporary injunction was heard in Trenton, July 2, when the Court agreed to dissolve it, provided the Reading Co. filed bonds in \$250,000 to keep the Central earnings as a separate fund, and to expend from them only what may be necessary for the current working expenses of the road, and to render account of the same to the Court. Further hearing in the case was adjourned until July 9. The required securities were given at once.

Pittsburgh, Bradford & Buffalo.—Contracts have been let to Mr. Connors, of Pittsburgh, for building an extension of 12 miles from Kane, Pa., to Mt. Jewett, on the Erie branch line, 19 miles south of Bradford. Work is to be begun at once.

Raleigh & Gaston.—This company recently purchased a stone-crusher and has put it at a quarry on the line. The intention is to ballast the whole line of the road with broken stone, and it is expected that this work will take about two years.

Richmond & Allegheny.—The second-mortgage bondholders met in Richmond, Va., July 3, and appointed a

committee to look after their interests. The committee consists of H. C. Parsons, James Miller, J. W. Johnston, J. A. Coke, T. C. Potts, J. T. Hubbard and R. M. Manly.

St. Johns.—This road is to be relaid with steel rails and put in good condition, and a new station is to be built in St. Augustine, Fla. At the other terminus at Tocoi, connection is to be made with the new Jacksonville, Tampa & Key West road by a steam ferry across the St. Johns River.

St. Louis, Fort Scott & Wichita.—Track on this road is laid to the outskirts of the town of Wichita, Kan., 18 miles beyond the late terminus at Towanda, and 156 miles from Fort Scott. Depot grounds have been secured in Wichita, and the track will be laid to them in a few days.

St. Paul, Minneapolis & Manitoba.—The St. Hilaire Branch is completed, and was opened for business last week. It extends from Crookston, Minn., east by north to St. Hilaire on Red Lake River, and is 22 miles long. Work is progressing rapidly on the branch to Devil's Lake in Dakota.

This company has bought a tract of 3,000 acres of land along the Des Moines River, north of Boone, Ia., for the underlying coal. The rumor is that the company will build a road from Minneapolis to this coal land, and thence to Boone, where connection is to be made with the Des Moines & Northern, which is now a narrow-gauge road.

Seaboard & Roanoke.—The iron bridge over the Roanoke River at Weldon, N. C., is now completed, and the last spans were brought into use last week. Part of this bridge was erected two years ago and the remaining spans are now in place. The iron bridge takes the place of a wooden one erected four years ago, when the old bridge was destroyed by a freshet.

Terre Haute & Logansport.—On the extension of this road from Logansport, Ind., northeast, track is reported laid to Kewana, 21 miles. Trains have not yet been put on the new road.

Texas & St. Louis.—The tracklayers working from the White River in Arkansas southwest have reached Rob Roy on the Arkansas, 261 miles from Bird's Point. The only work now remaining to be done is on the bridge over the Arkansas, which will probably be finished in two or three weeks. The company will then have a continuous line 719 miles long from Bird's Point, Mo., opposite Cairo, to Gatesville, Tex. A transfer ferry has been established between Bird's Point and Cairo, and trains will be run through to St. Louis, making a line of 870 miles from St. Louis to Gatesville. Work on the extension from Gatesville southward toward Laredo will soon be begun.

Thames River Bridge.—The board of engineers and naval officers appointed to report on the proposed bridge over the Thames River between Groton and New London, Conn., met in New London June 29 and on the following day. It appeared, however, that the proper notice had not been sent to parties in interest, and the board adjourned until July 9, when there will be a public hearing.

Tennessee & Sequatchie Valley.—In the United States Circuit Court in Chattanooga, Tenn., July 3, P. D. Albro, of Cincinnati, obtained a judgment of \$52,740 against this unfinished road, with an order for the sale of the road unless payment is made within 50 days.

Tidewater Pipe Line.—This company offers, through the First National Bank of New York, \$850,000 of its 6 per cent. mortgage bonds having 10 years to run. The total issue authorized is \$2,000,000, of which \$400,000 have been sold and \$750,000 are reserved for future use.

Union Pacific.—By the new time-table of this road two daily passenger trains will for the first time be run over the road between Omaha and Ogden, in addition to the emigrant train. One of these will be a local mail train, making connections with the various branches, and for Colorado, Utah, Montana and Idaho points; the other will be the through express, run in connection with the Central Pacific. The time of the through express is notably reduced, the train making the run of 1,083 miles from Omaha to Ogden in 42 hours, instead of taking 54 hours as heretofore. The Central Pacific time is also reduced, making about 24 hour's saving of time between San Francisco and Omaha.

As soon as the Pullman Co. can furnish cars enough, Pullman sleeping cars will run through between Omaha and San Francisco, avoiding the change now made at Ogden. It is understood also that dining cars are to be built and run through.

United States Rolling Stock Co.—This company will receive at its office, No. 110 La Salle street, Chicago, until noon of July 10, bids for the construction of car shops (including furnishing of materials) at the forks of the Calumet River in Hyde Park, near Chicago. Plans and specifications can be seen, and information obtained, on application to the architects, Wilson Brothers & Co., at the office in Chicago, or at No. 435 Chestnut street, Philadelphia. The shops are to be extensive and durable.

Utica & Black River.—Isaac Maynard, Treasurer of this company, will sell at public sale in Utica, N. Y., July 9, \$143,000 first-mortgage 5 per cent. bonds of the leased Ogdensburg and Morristown roads, guaranteed by the Utica & Black River Co. The bonds run to 1891.

Wabash, St. Louis & Pacific.—The lines owned by this company have been divided for operating purposes into four divisions, known as the Eastern, Middle, Western and Northern.

A new line between Detroit and Chicago has been arranged by the use of this company's Detroit Division to Auburn Junction, Ind., and the Baltimore & Ohio from that point to Chicago. The new line is very direct, being 272 miles long, between Chicago and Detroit. Through trains will be run over it in connection with the Grand Trunk line between Detroit and Buffalo.

West Jersey.—This company's statement for May and the five months ending May 31 is as follows:

	May	Five months—
	1883.	1882.
Earnings.....	\$82,412	\$73,493
Expenses.....	62,398	45,237
Net earnings.....	\$20,014	\$28,256

For the five months there was an increase of \$48,886, or 15.2 per cent., in gross earnings; an increase of \$58,537, or 30.8 per cent., in expenses, and a decrease of \$9,701, or 7.5 per cent., in net earnings.

Wisconsin Central.—Surveys have been completed for a branch about 50 miles long from this road to the Penokee and Agogebic iron ranges. It is uncertain whether the branch will be built this season, especially in the present dull condition of the iron ore market.

Zanesville, McConnellsville & Pomeroy.—This company has been organized to build a railroad from Zanesville, O., down the Muskingum River to McConnellsville and thence southward to Pomeroy, about 60 miles in all. Branches to Athens and Corning are also proposed.